NETWORK WORLD

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IBM, UCLA work to wed SNA, TCP/IP

By Paul Desmond
Staff Writer

LOS ANGELES — IBM last week announced a two-year, $5 million project with the University of California at Los Angeles (UCLA) to develop gateway software to link Systems Network Architecture environments with TCP/IP-based local networks.

IBM expects the project to lead to the creation of products that satisfy the needs of other schools and businesses that are large users of SNA and the Transmission Control Protocol/Internet Protocol.

If successful, the project will also pave the way for communications between SNA and proprietary local-area networks.

This is the second network project with a major university that IBM has announced in recent months. In August, IBM disclosed that it will invest $30 million in a venture with the University of Michigan to study use of mainframes as file servers for up to 30,000 disparate workstations ("IBM, U. of Michigan join in multivendor net study," *NW*, Aug. 15).

Also in August, the company announced that next year it will begin deploying the Andrew File System (AFS), which was devel-

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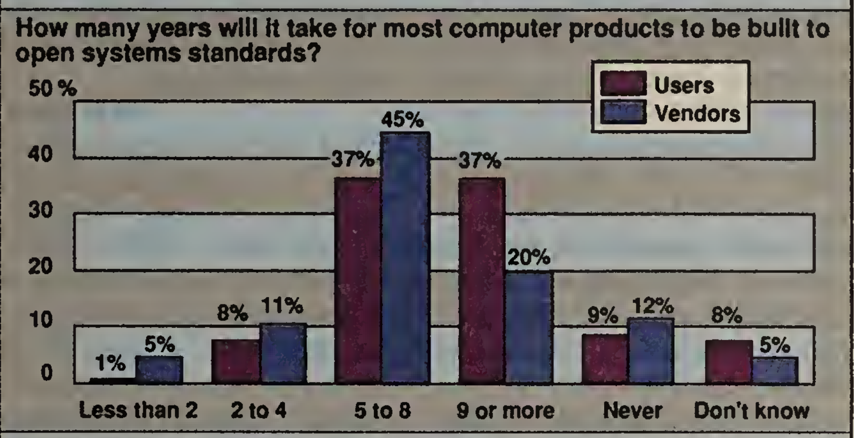
Open systems timetable



Figures are based on a survey of 119 users and 107 vendors. Vendor figures do not total 100% because not all respondents answered the question.

SOURCE: CORPORATION FOR OPEN SYSTEMS, MCLEAN, VA.
GRAPHIC BY SUSAN J. CHAMPENY

New studies show bright future for open systems

COS, Coopers & Lybrand survey users and vendors about OSI implementation, awareness.

By Barton Crockett
Senior Writer

Two studies released last week indicate that, within a few years, adoption of Open Systems Interconnection standards will skyrocket in the U.S.

In one study, the Corporation for Open Systems (COS) in McLean, Va., surveyed 119 users and 107 research directors with computer and communications manufacturers in North America. The survey was designed to gauge opinion on how quickly OSI standards will be implemented in products and to measure user interest in the COS Mark labeling program.

In addition, New York-based accounting firm Coopers & Lybrand surveyed 122 users who attended June's Enterprise Networking Event (ENE) '88 International in Baltimore. The firm asked respondents about their level of involvement with OSI — from planning to implementation of production systems — and about other issues regarding migration to OSI.

Both user studies show a groundswell of support for open systems building across the country.

"I expect a sharp shift in the next two years from studying and

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AT&T's Datakit II due out by year end

Firm readies a modular version of its virtual circuit switch that offers new network options.

By Bob Wallace
Senior Editor

MORRISTOWN, N.J — AT&T will release by year end a modular version of its Datakit Virtual Circuit Switch (VCS) that offers several new remote interface options, including a bridge for Ethernet local networks.

The Datakit II switch is expected to be announced in conjunction with upgrades for AT&T's Information Systems Network, a local network based on the same technology used in the Datakit.

An AT&T spokesman confirmed that the Datakit II will be introduced by the end of the year but refused further comment.

According to Datakit II product literature obtained by *Network World,* the new interface options will appeal to both corporate Datakit users and telephone companies that use the switch to provide central office-based local network services.

Designed by AT&T Bell Laboratories in 1983, the Datakit VCS is a virtual circuit switch with an 8M bit/sec backplane bus that handles 44,000 packet/sec and can support up to 3,500 simultaneous virtual circuits.

In central office-based local net environments, Bell operating companies will be able to provide new connectivity options by offering the interfaces as customer premises equipment.

Similarly, corporate users with Datakit networks will be able to install the stand-alone interface units in remote areas of buildings or around campuses.

The Datakit II is compatible with the current version of Datakit but has a new hardware design with self-contained, single-shelf cabinets that are individually powered. Datakit II nodes can consist of one to eight shelves.

The new interfaces provide a

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NTI users discuss DNS pilot tests

By John Cox
Senior Editor

NEW YORK — As top Northern Telecom, Inc. executives gathered here last week to sing the praises of the company's new Meridian Data Networking System (DNS), early DNS users were on hand to give some hard facts about their pilot projects.

The Northern Telecom officials were assembled for the formal introduction of the DNS, an intelligent networking system designed to merge computers and local- and wide-area networks into a single, centrally managed network that integrates both voice and data traffic ("NTI advanced data network set to bow," *NW*, Oct. 24).

Each DNS node can support a battery of interfaces for terminals and workstations, host computers, local nets, private branch exchanges and other devices. The nodes can be interconnected with different wide-area network options, including X.25 packet nets, leased lines and, in the future, T-1 lines.

The DNS will also eventually support Integrated Services Digital Network and Open System Interconnection protocols, according to Northern Telecom.

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NETLINE

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E-MAIL USERS UNITE in urging vendors to adopt standard X.400 messaging protocols. Page 2.

TELENET AND RETIX push for development of an interface linking LAN-based E-mail systems over public X.400 networks. Page 2.

UNGERMANN-BASS UNVEILS a LAN operating system based on OS/2 LAN Manager. Page 3.

USERS OF BELL ATLANTIC'S central office LAN can now share files and resources with Ethernets. Page 3.

CENTREX USERS COMPLAIN about limited feature deployment at their annual users group meeting. Page 6.

DU PONT HAS SEEN the future of transaction information communications, and that future is EDI. Page 41.

NEWSPAPER

FEATURE

MAP/TOP Users Group faces one more summit

With network specifications completed, the group tackles another task: reorganization.

By Bruce Guptill
Features Writer

A good measure of a users group's effectiveness is the influence it has on its industry. By that yardstick, the MAP/TOP Users Group stands on a peak high above most others.

Formed to coordinate the development of the Manufacturing Automation Protocol and the Technical and Office Protocol, the MAP/TOP Users Group pushed the acceptance and continued development of both architectures, coordinating efforts of developers, users and vendors to help MAP and TOP grow into internationally accepted communications standards.

Recently, however, when the group seemed to have reached its apex — June's Enterprise Networking Event '88 International in Baltimore — it found one more mountain to climb. It an-

INDUSTRY FOCUS

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E-mail users urge vendors to support X.400 standard

Say messaging standard is 'potentially ideal for interconnection,' making gateways superfluous.

By Wayne Eckerson
Staff Writer

BOSTON — Electronic mail users at a two-day conference here last week called on vendors to hasten the adoption of the X.400 messaging standard and to strive to make their products easier to use.

Attendees at Electronic Messaging '88, a conference sponsored by the Electronic Mail Association, said adoption of universal messaging standards will boost business productivity and spur the creation of more powerful E-mail applications.

In a panel entitled "User Needs and Requirements," James Burridge, senior systems analyst at Procter & Gamble Co., urged vendors to develop compatible messaging systems.

"We want vendors to cooperate with each other to make messaging systems compatible, and we see X.400 as potentially ideal for interconnection," Burridge said. "To achieve the reality of X.400, vendors can't design their systems in a vacuum or be defensive when working with other vendors."

Burridge said the X.400 standard is imperative for companies with multivendor environments. The standard will alleviate the need to build gateways between disparate systems and will let users do away with existing gateways.

Unfortunately, X.400 will come too late for companies that have already established large multivendor messaging networks based on proprietary gateways.

"X.400 doesn't have business value for us until other businesses are using it," said S. Charles Spriggs, product manager for corporate E-mail at E.I. Du Pont de Nemours & Co., Inc. Spriggs participated in a panel on "Industry User Perspectives."

Du Pont has a sprawling E-mail net that connects 60,000 users on five different E-mail systems. Employees send 50 million messages a year, five million of which travel between E-mail systems, Spriggs said.

Spriggs said Du Pont will move to implement X.400 when the standard becomes universally available. The standard will enable the company to eliminate protocol conversion between networks, lower costs and reduce delivery delays that can be as long as four hours, he said.

In a postconference interview, J.J. Cinecoe, senior product manager for Wang Laboratories, Inc.,

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Retix, Telenet champion LAN messaging interface

Firms urge formation of group to build interface.

By Bob Brown
Senior Writer

BOSTON — Telenet Communications Corp. and Retix last week proposed the formation of a committee to develop a standard interface that would allow local network-based electronic mail systems to send messages over X.400 public data networks to other local networks or computer systems.

The companies are trying to convince local net and E-mail vendors to join the committee, which would develop an interface that "would serve as the common thread joining LANs to [X.400] public data networks," said Richard Kozak, vice-president and general manager of electronic messaging at Telenet, a Reston, Va.-based data communications company owned by US Sprint Communications Co.

E-mail packages that support the interface would be able to exchange messages with other compatible packages over X.400 public networks.

"The major LAN E-mail providers would agree upon a standard to which they would all write, and the standard would then be available for those who want to use it," Kozak said.

If response to the proposal proves positive, the group could be officially formed by Nov. 15, Kozak said. Telenet hosted a dinner with Retix at the Electronic Messaging '88 conference here last week at which the two companies pitched the idea of a standards committee to a select group of vendors.

Prior to the dinner, Telenet held a press conference to announce, among other things, what it called the first-ever messaging link between local networks and a value-added network provider. Telenet announced commercial X.400 service with Retix and Consumers Software, Inc., both of which make local network messaging systems.

Representatives from a number of major players in the local network and E-mail markets, including Novell, Inc., Microsoft Corp., Banyan Systems, Inc. and 3Com Corp., were on hand to

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Briefs

Grand entrance. Ameritech last week acquired Tigon Corp., one of the leading voice mail service bureaus, by buying all outstanding Tigon shares for an undisclosed amount. The acquisition brings new capital to Tigon, which had been looking to expand its services in a joint venture with a long-distance or local operating company since March, according to company officials.

Tigon has won a number of major contracts recently, including a multiyear agreement with Eastman Kodak Co., which handed over management of its private voice mail network to Tigon ("Kodak plans move from private voice mail net to service bureau," *NW*, Oct. 24).

Tigon will be operated as a subsidiary of Ameritech.

Japan bows to pressure. Japan has agreed to drop its requirement that international value-added network (VAN) service providers serving Japan carry only traffic that conforms to international standards.

Details of the agreement will be outlined in a forthcoming letter from the country's Ministry of Posts and Telecommunications to Allen Moore, U.S. undersecretary for international trade in the Department of Commerce.

For more than a year now, Japan has required international VAN providers to prove they will migrate their systems to international protocols, such as X.75, in order to be licensed. The U.S. has protested the requirement, saying it impedes American carriers, many of which specialize in handling proprietary data communications.

Although Japan is expected to do away with the standards requirement, it will require international VAN providers operating proprietary networks to provide interconnection to other international VAN operators unless the vendors can demonstrate a commercial reason for not doing so.

Phil Onstad, a member of the public policy committee of the International Communications Association, called the agreement a victory for users. "I expect this to increase both the quantity and quality of international VAN services available to users in Japan," he said.

VAX-to-switch link launched. Advanced Computer Communications last week unveiled a private branch exchange interface for Digital Equipment Corp. VAX minicomputers that is based on AT&T's Digital Multiplex Interface, which conforms to emerging Integrated Services Digital Network standards.

Using the ACP 6640 interface, up to 23 terminals, each operating at 19.2K bit/sec and connected to a PBX, can communicate with a VAX host via a single twisted-pair line at T-1 speed. The ACP 6640 costs $10,000 and has been qualified by AT&T, Harris Corp. and NEC Corp. for use with their PBXs.

Presenting Presentation Manager. IBM and Microsoft Corp. are scheduled to unveil today the long awaited OS/2 Presentation Manager at a news conference in New York. IBM plans to establish the software package, published by Microsoft, as the standard user interface for a wide range of IBM products.

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Bell Atlantic server links E-nets, central office LAN

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — Bell Atlantic Corp. last week introduced a customer premises-based network server that allows users of its LANgate central office local net service to share files and resources with users on Ethernets.

The LANserver Plus, based on the Digital Equipment Corp. VAX, acts as a server in an Ethernet. It can be tied to a central office using dial-up or dedicated facilities to let users on the net share files and printers, and exchange electronic mail with LANgate users.

The server uses CommUnity software, which allows non-DEC systems to run under DECnet. The software was developed by Sudbury, Mass.-based Technology Concepts, Inc., a Bell Atlantic subsidiary, and supports X.400 E-mail and network management capabilities.

LANgate services are managed by a separate control system.

A second release of the LANserver, planned for late 1989, will include a gateway to IBM Token-Ring Networks and will support attached Apple Computer, Inc. Macintoshes.

It will also provide an integrated network management system for LANserver and LANgate.

LANgate routing

LANgate routes traffic among attached devices through an AT&T Datakit virtual circuit switch at the central office. With the service, both voice and data are transmitted over the same line. At the central office, data traffic is extracted and sent to the Datakit. The voice traffic is sent to the Centrex serving switch.

The Datakit switch can also route traffic to the LANserver.

Data is transmitted between LANgate users and the central office as well as between the LANserver and the central office at 19.2K bit/sec. The data can be carried over dial-up, dedicated or T-1 lines.

One LANserver can support 25 simultaneous sessions, but this number can be increased by upgrading the VAX hardware, said David Douglas, assistant vice-president of product line management and business services at Bell Atlantic.

Pricing for the LANserver will vary depending on configuration, Douglas said. As an example, a user with 100 workstations at four locations all one mile apart would pay $1,250 to $1,300 per workstation, plus the $20 monthly charge per workstation for LANgate. This price includes hardware, software, installation and a one-year warranty.

The LANserver can also be leased for $54 per month per workstation. This price includes the charges for LANgate and the LANserver.

The server is scheduled for de-

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Ungermann-Bass second to unveil LAN Manager OS

UB's Net/One MS OS/2 LAN Manager out just two weeks after 3Com version was unwrapped.

By Laura DiDio
Senior Editor

SANTA CLARA, Calif. — Ungermann-Bass, Inc. last week became the second vendor to introduce a local net operating system based on OS/2 LAN Manager.

The announcement of Ungermann-Bass' Net/One MS OS/2 LAN Manager comes two weeks after 3Com Corp. began shipping its 3+Open LAN Manager product, codeveloped with Microsoft Corp. ("3Com first to ship OS/2 LAN Manager," *NW,* Oct. 17).

OS/2 LAN Manager, based on the multitasking OS/2 operating system, is expected to be the foundation for one of three major local network operating systems. Products based on LAN Manager will compete for market share against Novell, Inc.'s NetWare and IBM's LAN Server, according to analysts.

About 35 local networking vendors have already committed to supporting LAN Manager.

With the release of Net/One LAN Manager, Ungermann-Bass claimed it is the first vendor to offer a product that extends OS/2 multitasking services to DOS-based workstations. "The fundamental difference between [Ungermann-Bass'] version and 3Com's version is that 3Com chose to begin shipping its offering without the DOS LAN Manager Redirector feature," said Georgeanne Benesch, Ungermann-Bass' product line manager for personal computer products.

The Redirector, or Requestor, is a software component that runs at the workstation, takes requests and routes them to the proper resource. "For instance, a request to print a specific document could be routed to either the workstation or the server, depending on whether the user wants to print a document locally or remotely," Benesch said.

Alan Kessler, product line manager for 3+Open products, acknowledged that 3+Open LAN Manager's DOS Requestor does not currently feature support for Named Pipes under DOS, a mechanism used for communications across programs or tasks.

But, he said, this lack of support is "a nonissue. There are currently no applications that have been written for Named Pipes under DOS. But we intend to provide this capability at or before the time Named Pipes applications are available."

Net/One LAN Manager, Benesch said, extends all of the LAN Manager capabilities to DOS workstations, including messaging, support for Named Pipes and the ability to run a program remotely at the server.

Net/One LAN Manager runs on both Ungermann-Bass servers and Personal System/2s dedicated as servers.

It allows users to share programs, information and peripherals on Ethernet and token-ring networks that support a mix of personal computer and Personal System/2 workstations running DOS or OS/2. Additionally, Net/One workstations and servers can interoperate across an organization's enterprisewide net via Ungermann-Bass bridges.

Other features of Net/One LAN Manager include server-based file security, advanced administration tools, support for IBM's Server Message Block protocol and printer spooling.

Ungermann-Bass felt it was important to incorporate the Redirector support for DOS work-

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New studies show bright future

continued from page 1

planning OSI to implementation," said Lawrence Bolick, manager of the New York telecommunications practice of Coopers & Lybrand. "OSI is clearly moving to the forefront of user networks."

The findings of the studies included:

- Forty-five percent of the users surveyed by COS said they believe "most computer products will be manufactured according to . . . standards that make them compatible" in less than eight years. Nearly 40% said this process will take "nine years or more" (see chart on page 1).

Vendors were even more optimistic, with 61% pegging this time line at less than eight years. Twenty percent said it will take nine years or more.

- More than 50% of the respondents to the Coopers & Lybrand study said they will be implementing OSI in their networks in the next two years, and 28% said they will have OSI production systems within that time.

By comparison, only 17% of the respondents said they are implementing OSI now, and 11% said they currently have production systems.

Of the nearly 60% of respondents studying or planning OSI networks now, 65% indicated that they expect to develop or implement OSI systems in the next two years.

- When asked if they have specified compliance with OSI in past requests for proposal, 27% of the ENE attendants surveyed said yes. And two-thirds of the respondents said they would specify OSI conformance in RFPs in the next two years.

The users polled by COS were those with primary responsibility for purchasing computer and communications equipment for their companies. They represented a range of companies, from those with revenue as low as $5 million per year to those in the Fortune 500.

Rodney Sandel, vice-president of sales and marketing for COS, conducted the COS study. He said a survey of just Fortune 500 companies would show even greater support for OSI.

Arguably, the Coopers & Lybrand study involves respondents with a greater interest in OSI — ENE attendees. It is heavily weighted toward manufacturing firms. Respondents to this survey include users with titles ranging from manager of information and communications systems to senior technical engineer.

Representatives from major users groups said the conclusions reached in these studies match their own perceptions of user support for open systems.

"If anything, I think most members of my association believe OSI is coming sooner than these results indicate," said Augie Blegen, executive director of the Association of Data Communications Users (ADCU).

Blegen predicted that most computer products will be OSI-compliant within two to four years.

While these studies show growing interest in OSI, the COS survey also indicated that users remain surprisingly uneducated about open standards.

What does OSI stand for?

For instance, when asked what the acronym OSI stands for, only 44% of the respondents answered correctly. Additionally, 57% of the COS respondents said they were either somewhat or entirely unfamiliar with OSI.

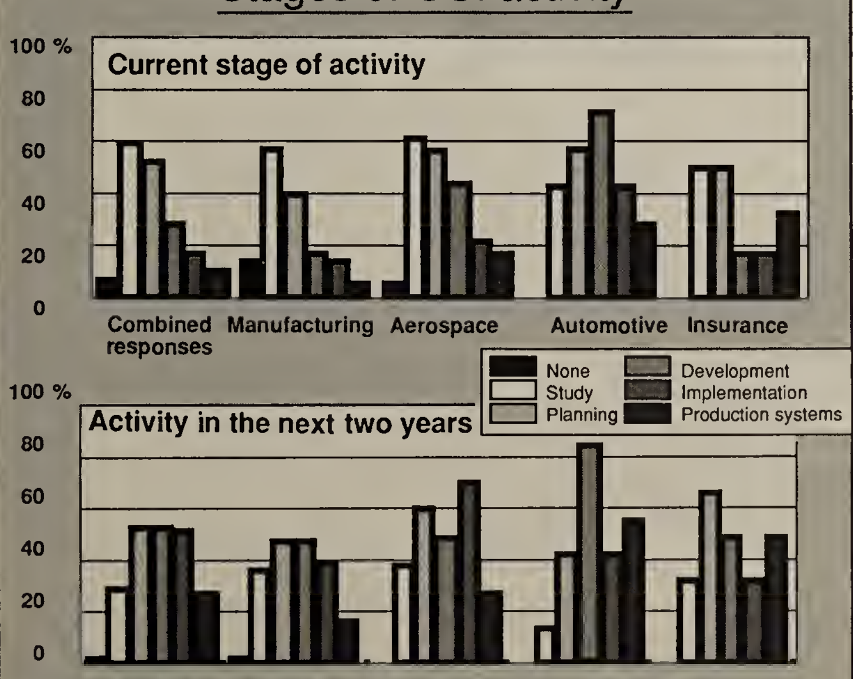
While 43% of the respondents said they were "familiar" with the seven-layer OSI model, Sandel said focus group discussions with users indicated this familiarity is very limited.

"I think the awareness problem runs at all levels in all size companies, and that's very bad," commented John Compitello, chairman of the regulatory committee for ADCU and former head of that group's standards committee. "This means that users groups and other organizations have to redouble their education efforts, or the standards issue will be left entirely to the vendors. This could hurt the entire open systems movement."

Other insights provided by these studies include:

- When asked to cite their biggest concerns about OSI, 37% of users said interoperability of equipment, 23% cited the migration effort, and nearly 20% listed network management. These figures varied by industry, however. Fifty-seven percent of the automotive and manufacturing firms cited migration as their biggest concern. Federal government respondents cited security as their second biggest concern.
- Seventy percent of the respondents to the COS study answered yes when asked "Does OSI need to interface with Systems Network Architecture in your environment?"
- When asked by COS how much more, as a percentage figure, they would be willing to pay for verified conformant products, 49% of the users said 5% to 9%.
- Thirty-three percent of the ENE respondents said they are interested in OSI solely for use in local networking, 3% said solely for wide-area networks, and 64% were interested in OSI for both local- and wide-area networking. ☐

Stages of OSI activity



Figures are based on a survey of 122 attendees at the recent Enterprise Networking Event '88 International in Baltimore. Totals greater than 100% are due to multiple responses per question.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: COOPERS & LYBRAND, NEW YORK

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Users fault vendors for slow Centrex deployment

National Centrex Users Group meeting used as forum to vent complaints to service providers.

By Bob Wallace
Senior Editor

HOUSTON — Users at the National Centrex Users Group (NCUG) meeting here last week complained to service providers and equipment vendors about slow and limited deployment of advanced Centrex features.

Some 700 representatives from user and vendor companies attended the second annual show, an increase from 500 attendees last year. All the regional Bell holding companies and most of the Bell operating companies were represented at the meeting.

While Centrex users pressed vendors for new Centrex features, representatives of the four top central office switch vendors — AT&T, Northern Telecom, Inc., GTE Communications Systems Corp. and Siemens Information Systems, Inc. — focused their presentations on advanced Integrated Services Digital Network capabilities. In a recent survey of Centrex users sponsored by NCUG, only a few of the respondents said they were looking for ISDN features or services.

The 117-user survey, released earlier to *Network World* ("Users speak on Centrex satisfaction," *NW*, Oct. 24), was a topic of much discussion at the show. It indicates Centrex users are generally pleased with their service provider but are less enthusiastic about the service itself and such things as training and support.

NCUG said it will send the results of the customer satisfaction survey to top officials of the RBHCs, local telephone companies and equipment makers.

At the meeting, much of the user criticism was directed at the BOCs. Users said the BOCs often do not equip their switches with the manufacturer's most advanced software. Centrex users also said that the BOCs only offer features they think will be big sellers and withhold implementation of other features until demand grows (see "Centrex users want lucid bills, more features," page 16).

NCUG President Richard Jenifer, a telecommunications specialist with Chicago-based CNA Insurance Co., said this common practice is a source of much frustration for users.

"It's a problem Centrex users are all grappling with," Jenifer said. "And it's a problem we have had for several years." CNA Insurance uses 6,000 Centrex lines.

According to Jenifer, the ability to access station message detail recording data and administer station moves, adds and changes from an on-premises terminal are among the most sought after advanced Centrex features.

"These features are crucial to our businesses. We've got to have them," Jenifer said.

Ronald Marceau, the communications manager for the city of Southfield, Mich., which uses 375 Centrex lines, echoed Jenifer's sentiments.

"Northern Telecom informs us of all the wonderful features their switches can support," the manager said. "But we face long delays in getting most of those features. We may never be offered some of them."

Susan Rueppel, telecommunications manager for the California Trucking Association (CTA) and an NCUG founder, said BOC service plans do not match her group's needs. "The [BOCs'] plans are great. But we could've used their planned features yesterday, not next year," she said. The CTA uses about 150 Centrex lines. Rueppel said she and other members of her local Centrex users group have prioritized the Centrex features they need and submitted this information to Pacific Bell.

Much of the criticism was directed at BOCs.

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Another Pacific Bell Centrex user, who asked not to be named, said the BOC does not yet offer a number of important features, such as voice mail, in her region.

Slow Centrex feature deployment can cause problems for companies that manufacture central office switches. While users often pressure the switch makers for information about such features, the vendors have little or no say as to when and how Centrex features are rolled out.

"We have absolutely no control over the way the local telephone companies implement Centrex," said David Deens, director of product applications for Phoenix-based GTE Communications Systems. Deens' group builds and sells GTD-5 EAX digital central office switches.

Stephen Cunningham, director of Meridian Business Services marketing for Northern Telecom, said he is regularly approached by users that want to deal directly with his company — and not the BOCs — to negotiate feature roll-out plans. He said Northern Telecom cannot help them.

To keep in close touch with its customers, the company helped form a DMS-100 users group earlier this year. Cunningham said the group includes Centrex users, such as CNA Insurance, that use Northern Telecom's DMS-100 central office switch.

Northern Telecom also holds two meetings a year for telephone company Centrex marketing representatives. The 3-year-old group discusses Centrex feature deployment and service pricing, Cunningham said.

NTI users discuss DNS pilot tests

continued from page 1

DNS nodes can support server functions and applications such as X.400 mail and directory services.

The system also boasts a centralized net management capability that will work with other net management systems.

Early users at the briefing said they tested DNS nodal processors equipped with various interfaces and connection options. They said the DNS architecture will help them build centrally managed, voice-data utility networks supporting disparate processors and applications.

Northwestern Mutual

Managers with The Northwestern Mutual Life Insurance Co. of Milwaukee discussed the firm's ambitious plans for deploying a DNS network.

The company has been running a small pilot DNS network for about two months. Next year, the company will start building a nationwide DNS network comprising more than 100 nodes.

Company officials said the DNS will enable them to boost network speed and capacity, as well as improve reliability through centralized network management and dynamic alternate routing.

The combination of higher speed lines and the use of X.25 protocols instead of IBM 3270 Binary Synchronous Communications protocols could boost network performance by as much as 16 times, one manager said. There are no immediate plans to add voice traffic to the DNS net.

Today, each of Northwestern's 106 general agent offices have a Wang Laboratories, Inc. minicomputer that supports attached terminals and printers, according to Hugh Hoffman, systems coordinator with Northwestern's Information Systems Department. Eight to ten of these offices share a 4.8K bit/sec multidrop leased line to the data center.

Approximately 50 smaller district offices use personal computers equipped with modems that are also linked to the data center with 4.8K bit/sec multidrop lines.

Other offices use modem-equipped microcomputers to access the host via Tymnet dial-up links.

Northwestern will build a DNS backbone network to tie all offices into the data center. Regional DNS backbone nodes will be linked to each other and to DNS units in the data center to form a packet-switching network using 19.2K bit/sec leased lines. The DNS units at headquarters will be channel-attached to a host processor.

The company will replace the Wang minicomputers in each general agent office with a DNS node supporting microcomputer workstations. Each DNS backbone node will support a number of general agent offices linked to it by 9.6K bit/sec leased lines. Smaller district offices with microcomputers will be tied into backbone DNS nodes via 4.8K bit/sec leased lines and packet assembler/disassemblers.

Other offices will continue to use Tymnet dial-up links terminated at DNS nodes at headquarters.

In the pilot DNS project, which involved the general agent office in Milwaukee, Northwestern shifted some applications from the Wang minicomputer to the microcomputer workstations. Response time improved because DNS enabled the office to use a point-to-point leased line instead of sharing a slower line with several other offices. Some applications also ran faster on the microcomputers, Hoffman said.

But improved performance and reliability are only part of the picture, said Michael Backus, Northwestern's assistant director of information systems.

Today's insurance offerings are so complex that agents need powerful tools to analyze a customer's unique needs, Backus said. And today's insurance market is so competitive and fast-moving that the analysis has to be done quickly.

In the long term, explained Backus, the DNS architecture will enable Northwestern to use DNS nodes in the general agent offices as file and application servers for the locally attached microcomputers.

The company will download applications and data files to the DNS nodes to give agents more processing power and faster access to information.

Delmarva Power & Light

Delmarva Power & Light Co., a gas and electric utility serving the Delaware-Virginia-Maryland area, initially tested DNS to determine whether it could improve performance for a specific application. But like Northwestern, the utility is also looking to the future.

DNS provides a way for Delmarva to consolidate a number of vendor-specific networks onto a single utility network that will eventually combine voice and data, according to John Scoggin Jr., supervisor of network systems for Delmarva's Information Systems Department.

In the Delmarva trial, Scoggin tested a DNS configuration to see whether it could improve response time for terminal operators at a divisional office that was accessing a customer service application on a mainframe at headquarters.

The divisional office currently has 14 IBM 3274 cluster controllers linking several hundred terminals to an IBM 3090 MVS mainframe at headquarters. The controllers communicate with the mainframe at 9.6K bit/sec. Response time was often a problem, but improving it would have involved a costly upgrade to the mainframe's front-end processor, Scoggin said.

In the trial, Delmarva installed three DNS nodes. One was channel-attached to the headquarters mainframe and controlled the network. Two DNS nodes in the divisional office were linked to the headquarters DNS using two 56K bit/sec lines each.

Each of these nodes supported two 3274 controllers at 19.2K bit/sec.

The faster connection speed between controllers and nodes and between nodes and the mainframe site improved response time. DNS was able to achieve that cost-effectively, Scoggin said.

Also, the DNS node controlled local terminals, which meant that terminals could be added or moved without requiring a shutdown of the entire network.

The test at the divisional office addressed only a small part of Delmarva's communications requirements, Scoggin said. One of the utility's most pressing needs is to combine a mix of different networks, systems and transport media, he said.

Currently, Delmarva has a voice network supported by AT&T PBXs, which are being replaced with Northern Telecom Meridian SL-1 PBXs. The company also has Ethernet and token-ring local nets along with networks of terminals and printers attached to computers from Control Data Corp. and Hewlett-Packard Co. It also has T-1 links running over 130 miles of its own fiber-optic cabling.

"Every time we got hit with another new application, we wound up building another network. It's expensive and very difficult to manage," he said. "We've been looking for a coherent network architecture that can handle a multivendor environment."

The DNS appears to be the answer, he indicated. The variety of DNS interfaces will eventually let Delmarva merge traffic from these disparate nets onto a utility network, he explained.

"I see it as a good first step toward an intelligent network. We're going to be able to view IBM mainframes as peripherals [on] the network rather than the other way around," he said.

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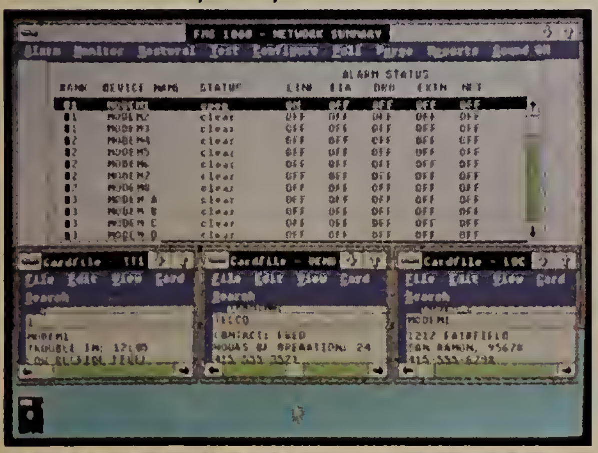

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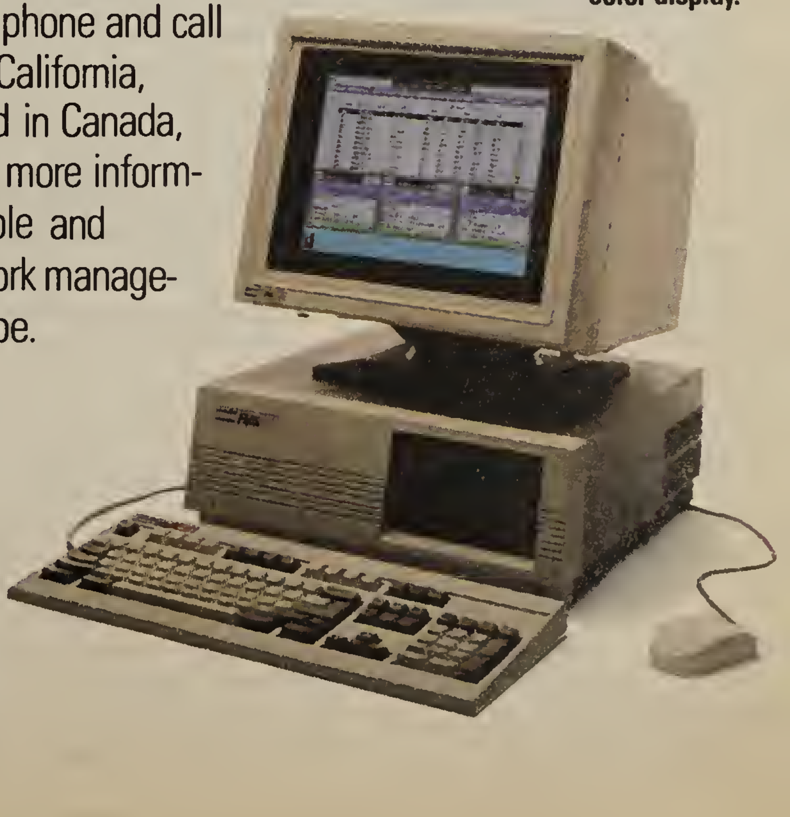

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

> "A world of isolated national economies — or even a world of isolated regional cartels — hiding behind protectionist trade walls is the very antithesis of the openness promised by communications technology."

Eugene Sekulow
President
Nynex International Co.
Speaking at the Intelevent 88
conference in Cannes, France

People & Positions

Roger Dorf recently joined **Paradyne Corp.** of Largo, Fla., as executive vice-president of operations and general manager of subsidiary operations.

He will be responsible for manufacturing, international operations and Paradyne subsidiary Solid State Circuits, Inc. Dorf had been with Cullinet Software, Inc. as a corporate officer, vice-president and general manager of its banking products division.

Gilbert Cabral was recently promoted to president and chief executive officer of the Integrated Network Group of **Micom Communications Corp.** (formerly Micom Systems, Inc.). Cabral, formerly corporate vice-president of manufacturing, said he will focus Micom's marketing efforts on its traditional statistical multiplexer and data switch data communications business, and expand the company's X.25 product line.

Action Technologies, Inc. last week announced that **Thomas White,** former chairman of Infonetics, Inc., has been named senior vice-president of strategic marketing. In this newly created position, White will be responsible for strategic product direction for the communications hardware and software maker. ◻

AT&T and MCI at odds in Tariff 15 filings with FCC

Carriers dispute virtually every aspect of plan.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — In arguments recently submitted to the FCC as part of its investigation into AT&T's Tariff 15, AT&T and MCI Communications Corp. disagreed on almost every issue surrounding the plan.

The two firms painted different pictures of the events leading up to the creation of Tariff 15, the legality of customer-specific offerings and the effect the tariff will have on the industry.

Tariff 15, which was allowed to take effect Sept. 15 while the Federal Communications Commission investigates its legality, allows AT&T to offer below-tariff, customer-specific service arrangements to customers being wooed by competing carriers making similar offers.

The issue has created a storm of controversy and could force the FCC to decide whether different regulations should continue to be applied to dominant and nondominant carriers.

AT&T claims it is unfair for the FCC to allow nondominant carriers to offer customer-specific, reduced-price deals while preventing AT&T from doing the same. AT&T has said repeatedly that it was only attempting to respond to an MCI offer when it filed a special pricing plan for Holiday Corp., owner of the Holiday Inn hotel chain, under Tariff 15.

MCI told the FCC that its offer to Holiday was prompted by AT&T's filing in October 1987 of the Hospitality Network Service tariff, through which AT&T offered hotels a reduced price of 18 cents per minute for customers using at least four million minutes of 1+ traffic per month.

Two sets of regulatory rules are at the root of the Tariff 15 debate. The first is a series of proceedings, initiated in 1979 and referred to generally as the Competitive Carrier rulings, that designated AT&T a dominant carrier and other firms nondominant carriers; the rulings also established different regulatory procedures

(continued on page 12)

INDUSTRY BRIEFS

Northern Telecom Ltd., parent of the domestic Northern Telecom, Inc., recently reported third-quarter revenue of $1.23 billion, up 6% over revenue of $1.16 billion for the corresponding quarter in 1987. Net earnings for the quarter, however, dropped 16%, from $66 million in 1987 to $56 million this year. The decrease in net earnings was largely attributable to lower international demand for the company's products and a shipment delay for the DMS SuperNode, the company said.

Local network maker **SynOptics Communications, Inc.** of Mountain View, Calif., recently announced that its third-quarter revenue skyrocketed from $1.82 million last year to $13.26 million this year. Net earnings followed suit, jumping from $57,000 for the third quarter last year to $2.06 million this year.

The company said its strong financial performance is a reflection of the rapid acceptance of its LattisNet product, which enables users to build 10M bit/sec Ethernet local networks using unshielded twisted-pair telephone wire.

Davox Corp. of Billerica, Mass., last week reported a net loss of $1.24 million for the third quarter, greater than the $226,000 loss for the corresponding quarter last year. Revenue for the quarter was $7.4 million, up from $5.3 million last year. Davox makes communications systems for telemarketing and customer service applications.

BellSouth Systems Technology's California Centrex Service of Walnut Creek, Calif., was recently purchased by private investors for an undisclosed sum and renamed **Pacific TeleManagement, Inc.** The buyers were management members of the company. All key management and personnel have been retained and will continue to operate the company. Frank Nagelmann, former manager of the BellSouth unit, has been named president of the new unit. The company offers telecommunications cost management services. ◻

RBHCs report third-quarter results

	Earnings in millions		Revenue in billions	
	1987	1988	1987	1988
Ameritech	$301.1	$281.1	$2.42	$2.51
Bell Atlantic Corp.	$321.8	$341.0	$2.59	$2.61
BellSouth Corp.	$418.6	$419.6	$3.11	$3.45
Nynex Corp.	$332.1	$338.9	$3.08	$3.18
Pacific Telesis Group	$302.0	$318.0	$2.33	$2.38
Southwestern Bell Corp.	$314.1	$323.3	$2.09	$2.23
US West, Inc.	$277.5	$283.2	$2.13	$2.29

GRAPHIC BY SUSAN J. CHAMPENY

ISDN users speak out at Codex meet

Despite current problems, users say technology will help them build flexible, less costly nets.

By Bob Brown
Senior Writer

BOSTON — Despite finding ISDN products expensive and incompatible, early users at a seminar here last week said they believe the technology will permit the building of flexible, less costly networks in the future.

The seminar, sponsored by Codex Corp. of Canton, Mass., was led by a six-member panel that included four Integrated Services Digital Network users, a spokesman from Bell Canada, an ISDN service provider and a representative from Apollo Computer, Inc.

The panelists discussed how they felt about the current state of ISDN technology and what they hope to see in the way of ISDN products and services in the near and distant future.

Panelist Jeffrey Fritz, a data communications analyst in the telecommunications department of West Virginia University in Morgantown, said ISDN will help drive down the cost of networking at the school by making it possible to replace modems.

But the biggest ISDN-related savings will be realized through "simplified, more timely and less costly moves and changes for workstations," said Stephen White, supervisor of communications and workstation technology evaluation at Chevron Information Technology Co. in San Ramon, Calif.

Less costly communications for IBM 3174 control units in Systems Network Architecture networks and replacement of expensive analog and digital data service lines to point-of-sale devices at Chevron service stations are other potential money-savers, White said.

Robert Furtaw, engineering manager for Boeing Computer Services Co. in Seattle, said one of the biggest differences ISDN will make at his company will be the consolidation of data and voice personnel into one engineering group. This will spur the development of more creative ISDN applications, Furtaw said.

Boeing has already invested $120 million in a private ISDN network that is based on a backbone of five AT&T 5ESS central office switches.

While all users on the panel discussed tangible benefits from ISDN, they also expressed frustration with the technology and the way that vendors have brought it to market.

> We need "a more uniform implementation of standards," Simmons said.
>
> ▲▲▲

Thomas Simmons, a consulting engineer on the corporate telecommunications staff of Tenneco, Inc. in Houston, said his company began implementing ISDN-based enhanced digital Centrex service from Southwestern Bell Telephone Co. last May.

Simmons said ISDN allows his firm to choose terminals from a variety of manufacturers for the first time. He also said the often maligned basic rate of 64K bit/sec is more than adequate for most applications, but added that he is disappointed by vendors' lack of attention to standards.

"A more uniform implementation of standards needs to be accomplished," Simmons said.

West Virginia University's Fritz shared Simmons' concern about a lack of vendor support for

(continued on page 12)

“Our college needed to enter the Information Age. But we weren’t sure we could afford the price of admission.”

For an educational institution, nothing is more important than the smooth exchange of information. That’s why many colleges are making information networking a top priority.

The toughest challenge is connectivity. Colleges and universities, like most places, acquire computers and telecommunications hardware in patchwork fashion, ending up with little or no compatibility.

For one northeast college, AT&T Network Systems, working with the local telephone company, demonstrated that ISDN was the solution. Their information services manager explained: “ISDN gave us the best capabilities for the least cost. And we didn’t have to trash our existing systems.”

With central office-based ISDN, ordinary phone lines become the links in a fully interactive network. This translates into many applications and benefits. Voice and data can be transmitted simultaneously. For example, students and professors can confer with the Dean, who has on-line access to student records. Electronic mail streamlines interval communication, so course enrollment changes can be posted immediately. PC/terminal access to host computers and electronic file transfer extend every user’s access to sophisticated software and multiple databases.

As the college’s IS manager puts it: “ISDN can revolutionize the education experience. It’s going to make us a better college. And, bottom line, a more competitive college.”

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ISDN users speak out at Codex meet

continued from page 9

standards. There is an "irritating lack of standards, particularly when it comes to the B channel," Fritz said. "Every vendor, it seems, is following its own rate adaption scheme, and you cannot intermix many pieces of equipment, which is very difficult. It forces us into a decision of one or nothing."

The seminar's sponsor, Codex, has not yet brought any ISDN products to market. But Codex does have an ISDN gateway product in trials, and its parent, Motorola, Inc., has introduced several types of ISDN semiconductor components.

Motorola recently joined Ameritech and Northern Telecom, Inc. in testing and developing ISDN products and services ("Ameritech, Motorola, NTI join to develop new ISDN applications," *NW*, Oct. 24).

Before the panelists took center stage, Codex representatives laid out the company's ISDN strategy.

Robert Heile, Codex's vice-president of product development, said Codex plans to protect "our customers' investment in existing products while supporting the migration path [to ISDN]."

Codex also plans "to permit continued use of in-place, value-added network components by simply attaching them via gateway interfaces to ISDN," Heile said.

The Codex gateway product currently being used in US West, Inc. ISDN trials with the Arizona Department of Transportation and the National Bank of Oregon in Portland, Ore., will also be used in three other trials. The trials include a joint effort with Apollo to test a gateway for linking local networks to each other and to data centers via ISDN; a three-company trial with Pacific Bell and Chevron testing SNA capabilities and using ISDN Basic Rate Service to support multiple asynchronous terminals; and a third with Bell Canada, which will support Motorola terminals with ISDN lines and enable users to access remote applications over Bell Canada's Datapac packet network.

The experimental ISDN gateway product, which supports a number of capabilities ranging from protocol conversion to rate adaption, will be shipped in volume next year, Heile said.

"It's interesting to see Codex raising the ISDN flag," said Josh Gonze, a research analyst at the market research firm International Data Corp. in Framingham, Mass. "It would be much easier to dismiss ISDN as voice or carrier technology." ■

AT&T and MCI at odds over Tariff 15

continued from page 9

for both sides. Nondominant carriers, for example, are not required to file tariffs for service offerings.

MCI said AT&T's complaint that different regulatory standards are being applied to nondominant carriers "rings particularly hollow" in light of the Competitive Carrier decision. "Different standards, indeed, have been applicable — and properly so — to AT&T and nondominant carriers for nearly a decade now, and they never before have been formally challenged by AT&T," MCI said.

The second set of rules, contained in the Communications Act of 1934, prohibits carriers from discriminating against customers by charging different prices for similar services.

MCI has charged that, because AT&T's first Tariff 15 offer was made exclusively to Holiday, it violates these nondiscrimination provisions. MCI has also argued that, as a nondominant carrier, it is incapable of the type of pricing discrimination prohibited by the Communications Act.

In the Competitive Carrier rulings, the FCC concluded that nondominant carriers generally offer long-term service commitments, different service quality and volume discounts as methods of winning customers.

Such practices may lead to differences in rates for similar customers, the FCC said in its rulings, but it also said it does not "believe that these differences will generally constitute unreasonable discrimination under the [Communications] Act."

AT&T argued before the FCC that the Competitive Carrier proceedings changed only the regulatory procedures to be used for nondominant carriers and not the applicability of provisions in the Communications Act.

AT&T and proponents of Tariff 15 say the nondiscrimination provisions of the Communications Act apply equally to all carriers. AT&T says MCI's offer to Holiday was customer-specific and, because the FCC allowed MCI to proceed with such an offer, it must allow AT&T to do the same. "What the Communications Act will not allow is a double standard," AT&T said.

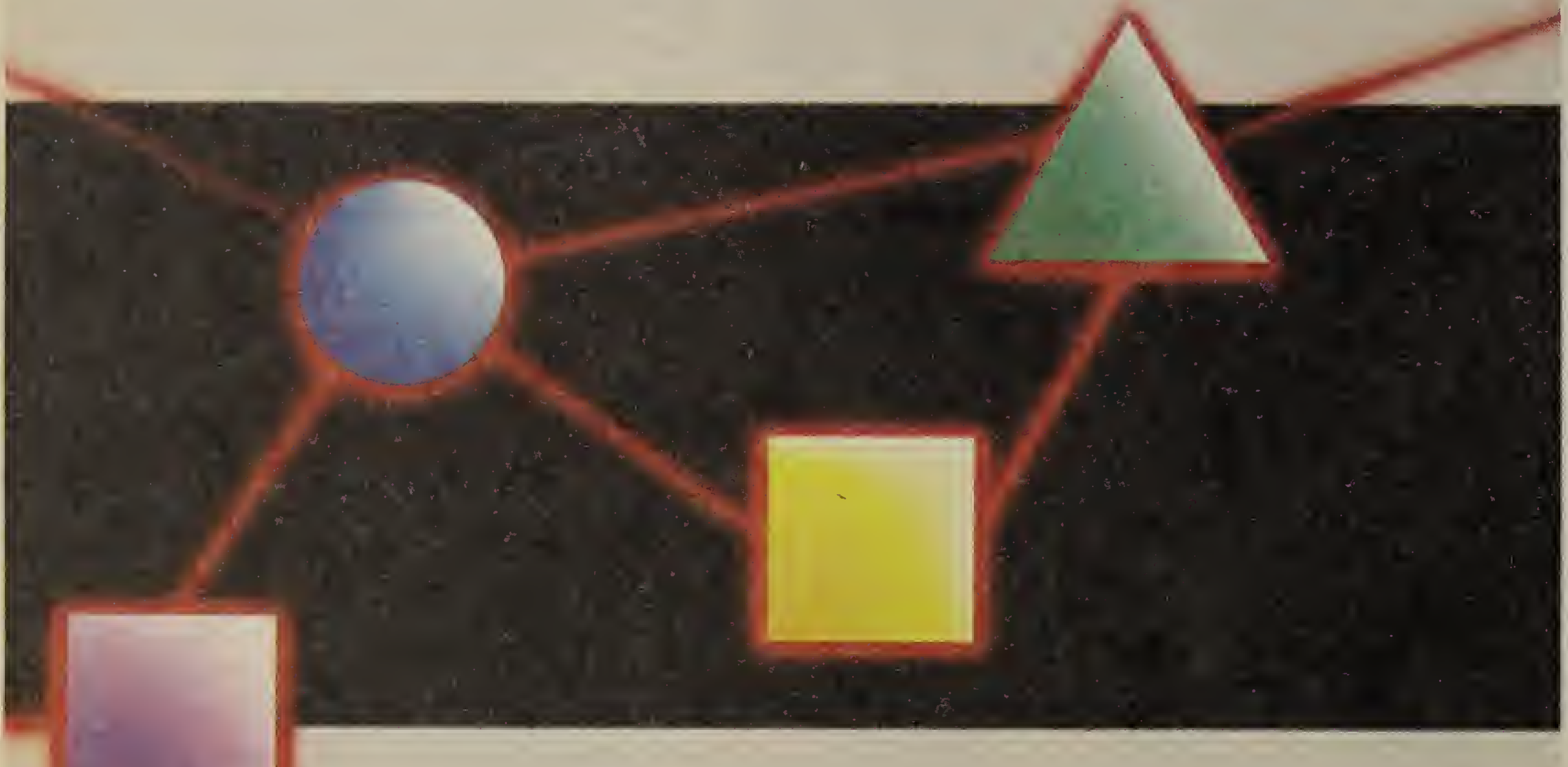
MCI counters this argument by saying that even if the discrimination provisions of the Communications Act did apply, MCI's offer to Holiday would not have been in violation.

The company supplied an affidavit from Hiram Brett, a senior accounts manager with MCI, who indicated that the offer to Holiday was made according to established corporate guidelines for making offers to any customer. MCI said that "substantially similar offers have been made to numerous other MCI prospects" over the last 18 months.

MCI said that it lost all business with Holiday after AT&T was allowed to proceed with its offer to the company. MCI has argued that, if AT&T is allowed to proceed with Tariff 15, competition in the marketplace will be greatly diminished.

AT&T is likely to "flood the commission with a tidal wave of preferential rate filings," MCI said. "Lacking the resources to meaningfully review each and every filing, the commission would inevitably 'rubber stamp' AT&T's proposals," effectively ending regulatory oversight of AT&T.

AT&T says Tariff 15 would allow all carriers to participate on an equal basis and therefore create price competition that benefits consumers. ■



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Worth Noting

New York-based Metromedia Long Distance, a provider of international and domestic services, has begun offering its users operator services. Calls placed through an operator will be charged at regular long-distance rates in addition to a per-call fee equivalent to the handling fee charged by AT&T.

Carrier Watch

MCI International, the international arm of **MCI Communications Corp.**, recently announced it is offering users a 25% discount on the first year's cost of a private line to any of the 80 countries MCI International serves.

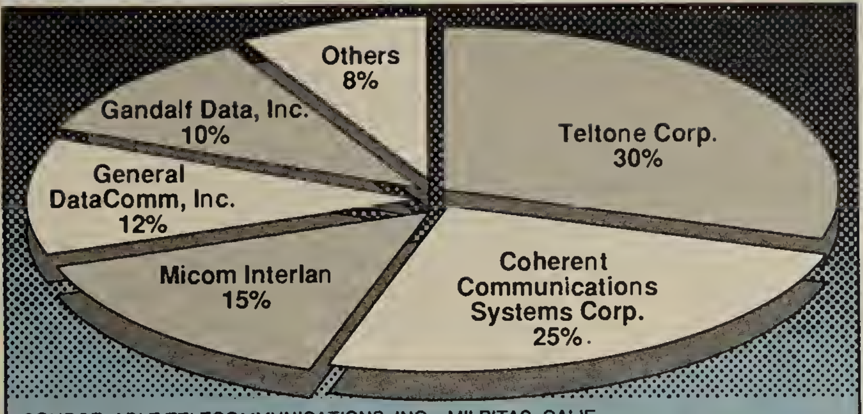
The discount, being offered by the carrier between now and Dec. 31, applies to all of MCI International's M1020 circuits, which are used for voice and low-speed data transmission, as well as for some voice/data applications. The discount is available only for service implemented before April 1, 1989.

MCI International offers M1020 circuits to countries via satellite and undersea cable. The circuits can originate from any of 10 cities in the U.S.: Boston, Chicago, Detroit, Houston, Los Angeles, Miami, New Orleans, New York, San Francisco and Washington, D.C.

US West Communications, Inc. recently announced plans to install Integrated Services Digital Network-compatible switches in four central offices in Montana. Those central offices are located in Missoula, Great Falls, Billings and Helena.

US West Communications will deploy the AT&T 5ESS switches by April 1989, when it also plans to deploy ISDN-ready switches at Boulder, Colo., and Tucson, Ariz., as previously announced.

Data-over-voice market leaders



SOURCE: ABLE TELECOMMUNICATIONS, INC., MILPITAS, CALIF.
GRAPHIC BY SUSAN J. CHAMPENY

Congress moves to speed FCC tariff investigations

Amendment sets time limits, eases appeals.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — Congress recently amended the Communications Act of 1934 to impose time limits on Federal Communications Commission tariff investigations and to make it easier for parties to appeal FCC decisions.

The amendment, now awaiting presidential approval, would give Congress more control over tariff investigations, some of which have dragged on for three or more years.

The FCC Authorization Act of 1988 would require the FCC to complete investigation of a tariff within one year after the tariff takes effect. In some cases, the investigation could be extended by three months. Currently, there are no restrictions on the duration of a tariff investigation.

The amendment also specifies that any investigation currently under way must be completed within one year after the act becomes law. Congress said it expects the FCC to complete its Tariff 15 investigation within six months and finish the investigation of Tariff 12 and strategic pricing by the end of the year.

The amendment says that any FCC order that ends a tariff investigation can be immediately appealed in court. Currently, tariff decisions issued by the Common Carrier Bureau must be appealed to the FCC before they can be appealed in court.

In introducing the amendment in the Senate, Sen. Daniel Inouye (D-Hawaii) said the measure strikes a balance between

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N.Y. Telephone pioneers intra-LATA virtual net

By Jim Brown
New Products Editor

NEW YORK — Beating its sister company to the punch, Nynex Corp.'s New York Telephone Co. recently became the first local operating company to offer an intra-LATA virtual private network service.

The service, called V Path, was approved by the New York Public Service Commission (PSC) in September. New England Telephone & Telegraph Co.'s request to offer a similar service was denied regulatory approval in July.

V Path service is an alternative to New York Telephone's regional calling plan and can be accessed via Centrex, individual business lines and private branch exchanges supporting direct-inward dialing.

The service enables customers to build a private network supporting a custom-numbering plan that uses the switched network for intra-LATA calls. V Path calls destined for other LATAs are handed off to customer-selected interexchange carriers.

A customer's V Path private-numbering plan is loaded into a New York Telephone computer data base. When users dial a private network number, the dialed number is routed via a Signaling System 7 network to the data base, where it is translated into the actual switched network number. The call is then completed via switched facilities.

According to Ed Hohl, product manager of virtual network services at New York Telephone, V Path will enable users with offices within the same LATA to complete intra-LATA virtual network calls as well as access a long-haul

(continued on page 16)

EC group strives for one Europe-wide net

Current network fragmentation forces int'l users to use a mix of different equipment, protocols.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — In an effort to bring some unity to the continent's fragmented telecommunications market, members of the European Community (EC) are working to implement plans that may one day lead to a common European network.

In June 1987, representatives from the 12 member countries in the EC introduced the Green Paper, a document that solicited discussion from users, government agencies and data processing and communications providers about the future of telecommunications in Europe.

The paper contained 10 proposals aimed at creating a new regulatory framework that would foster a Europe-wide network with common standards and interoperable equipment.

Such an initiative was deemed necessary, because leaders of the EC were concerned about "Europe's failure to speak with one voice" in the purchase and implementation of telecommunications systems, said Guy Pevtchin, an attorney in the Brussels, Belgium office of Squire, Sanders & Dempsey. The law firm, based here, recently sponsored a seminar here on the progress made toward implementing the Green Paper proposals.

Some countries in the EC have regulations that prevent equipment manufactured outside that country from being connected to the network. This means users whose networks cross national boundaries often have to use a combination of different equipment, protocols and transmission services.

Not only does this network fragmentation create difficulties for users, it prevents European countries from uniting to enjoy the advantages of making large joint equipment purchases from

(continued on page 14)

WASHINGTON UPDATE

Strategic pricing case continues. The International Communications Association (ICA) last week filed arguments with the U.S. Court of Appeals in Washington, D.C., stating why it believes the court should not dismiss the ICA's petition asking for a ruling on strategic pricing of special access tariffs.

Last December, the users group asked the court to order the Federal Communications Commission to issue a decision on strategic pricing of special access charges, an issue the FCC has been investigating for three years.

During a meeting earlier this month, the FCC finally ruled that strategic pricing is allowable under certain circumstances. It also asked for further comment on how pricing guidelines developed by the agency would apply to current tariffs under investigation.

In its filing with the court, the ICA argued that the FCC has not committed itself to a date for final resolution of the strategic pricing issue and has committed only to collecting additional information. "Given the history of delay in the FCC's investigation, neither the court nor interested ratepayers can rest assured that the FCC will promptly resolve the rate-level issues without further intervention by this court," the ICA said.

Free videotex terminals. Southwestern Bell Telephone Co. will distribute 12,000 terminals, some at no cost, during a videotex gateway trial scheduled to take place in Houston next March. The announcement was made by Ron Curlee, director of industry relations for U.S. Videotel, the company that manufactures the terminals, at a press briefing last week. The briefing was held during the Videotex Industry Association press conference in Washington, D.C.

According to Bill Motchan, a spokesman for Southwestern Bell, some of the terminals, which will be distributed to businesses and residential customers, will be provided free of charge. Others will be leased to users for a flat monthly fee of $10 to $12, which includes access time and use of the terminal.

EC group strives for one Europe-wide net

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international vendors, said Thomas Ramsey, an attorney with Squire, Sanders & Dempsey.

No single country in the EC accounts for more than 6% of the world's telecommunications market, Ramsey said. But when combined, the 12 EC countries compose 20% of the world market, surpassing the U.S., which accounts for 14%, and Japan, which accounts for 11%, Ramsey said.

Although the ultimate goal of the Green Paper is to open the EC to greater competition in both equipment and telecommunications services, member countries also wanted assurances that they would retain control over their local telecommunications nets. There was a feeling that if the post, telegraph and telephone administrations were exposed to too much competition, they might go broke, Ramsey said.

Protecting the PTTs

Consequently, two of the 10 proposals in the Green Paper are designed to ensure the financial viability of the PTTs. One provision allows the PTTs to retain exclusive control over the operation of the network infrastructure, and another allows them to be the exclusive providers of a limited number of basic services such as voice.

Although the PTTs will retain monopolistic control over basic voice services, almost all other services, including value-added information services, will be open to competition.

To ensure that the PTTs cannot use their market position to limit other providers, they will be required to separate their regulatory activities from the entities providing telecommunications services. Because the PTTs control licensing, equipment approval, interface specifications, allocation of frequencies and surveillance of network usage conditions, it would be unfair for the PTTs to be both player and referee, the Green Paper concludes.

Other proposals in the Green Paper are designed to protect competitors by stipulating that the PTTs cannot restrict equipment provision by outside vendors or place restrictions on the use or resale of competitive services. The PTTs would also be required to implement and maintain the network according to standards set by the EC and to clearly define its interconnection and access obligations to competitive service providers.

Of the 10 proposals, movement toward competition in the provision of telecommunications terminal equipment has proceeded most rapidly, with the EC issuing a directive in May that orders the gradual removal of restrictions on the sale and implementation of services and equipment.

Other proposals of the Green Paper are expected to be negotiated and implemented by 1992. By this time, the EC hopes to have completed its effort to create a single market for European countries free of trade barriers.

During the next year, agreements will probably be finalized for leased-line and public data network services and for guidelines to be used in gradually opening up European networks to competition.

The U.S. and other non-European countries have expressed fears that they may be locked out of European markets since EC countries would be more inclined to trade among themselves once restrictions are lifted.

However, Sir Roy Denman, head of an EC delegation to the U.S., said the EC has no intention of closing itself off from trade with the rest of the world. "We would be shooting ourselves in the foot in a majestic way," he said.

Ramsey also pointed out that the EC has set a very ambitious goal for itself and said there are some who doubt if everything in the Green Paper can be accomplished by 1992. Many of the issues are similar to those still unresolved by U.S. regulators during the last 20 years. The EC will try to resolve some of the same issues in only 18 months, he said. ◘

Congress speeds FCC tariff investigations

continued from page 13

the time needed for the FCC to reach tariff decisions and the interests of consumers, who could be overcharged for services provided through unlawful tariffs. Inouye said there are 21 pending tariff investigations, 12 that are more than one year old and two that have been pending since 1981.

Industry reaction to the amendment was mixed. A source in the Common Carrier Bureau described the legislation as potentially disastrous. The bureau is already understaffed and underfunded, the source said, and some tariffs may be approved without being properly investigated.

One Washington attorney who follows tariff matters strongly disagreed. "The idea that they need years and years to complete investigations into the lawfulness of any given tariff is an outrageous proposition. Only a small percentage of tariffs are ever investigated," said the attorney, who requested anonymity. He added that it is unlikely that staff members would be working on an issue every day for several years. The FCC "seems to think that if they let the investigation go on for years, people will just give up," he said.

Representatives from MCI Communications Corp. and AT&T described the amendment as a positive step. John Hoffman, vice-president of external affairs at US Sprint Communications Co., agreed. "Any time you introduce discipline into the regulatory process, it makes it better." Hoffman said most state public utility commissions are subject to similar time limits.

Richard Wiley, a senior partner of Wiley, Rein & Fielding and former chairman of the FCC, said the real significance of the amendment is not in the setting of specific time frames but rather that it will now be easier for parties to appeal an FCC decision. The FCC would probably complete most investigations in the specified time frame anyway, he said. ◘

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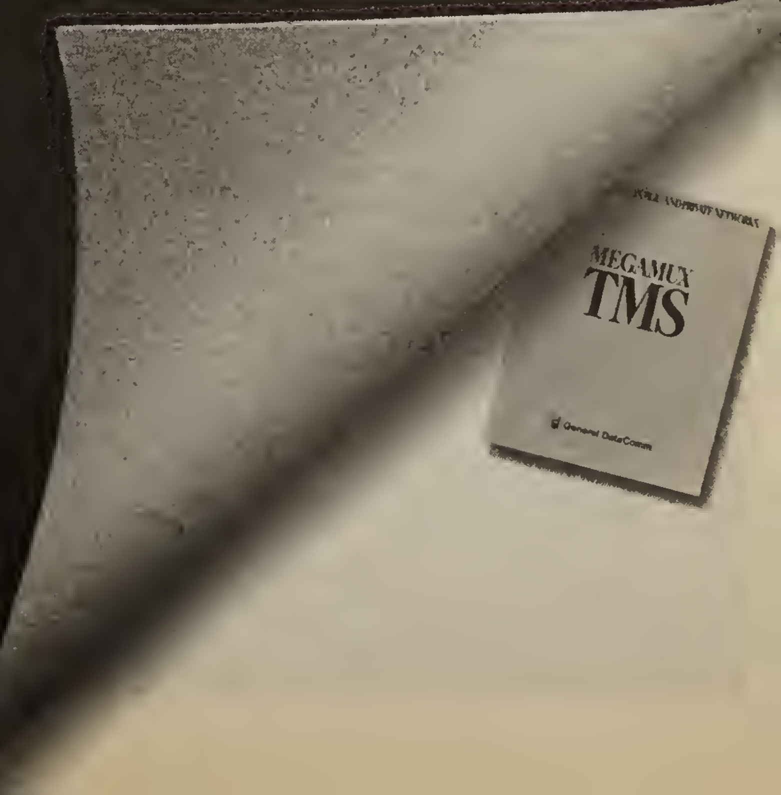


Centrex users want lucid bills, more features

By Bob Wallace
Senior Editor

HOUSTON — In a recent survey, Centrex users said they would like to see improvements in service billing, new features such as voice mail and a wider variety of station equipment.

Nearly 120 members responded to the National Centrex Users Group "1988 Customer Satisfaction Survey," and most of the respondents appended written comments outlining service improvements and new features they would like to see in coming months.

Understandable bills

Many respondents said Centrex bills need to be simplified. John LeSueur, telemanufacturer manager for Sherwin-Williams Co., a Cleveland-based paint company, said the Centrex bills he receives are confusing.

"Our average monthly Centrex bill is several hundred pages long. Even our account team can't figure it out," LeSueur said. "Each Centrex line is listed several times in the same bill. That in itself is very confusing."

Other survey respondents complained that their monthly Centrex bills are often late.

Several Centrex users said they want the Bell operating companies to transmit call-detail information to them — data they need to properly bill divisions, departments or users for calling services.

The BOCs currently give customers magnetic tapes containing this information. Centrex users, in turn, pass the tapes to the MIS department or to a third party for processing. This process takes at least several days, respondents said.

"The [entire] area of accounting for usage, costs, invoicing and reporting to the customer is inadequate, ineffective and a source of difficulty," one respondent wrote.

Among the Centrex features respondents requested was voice mail. "[I'd like] voice mail before mid-1989 and the ability to block access to 976 numbers," one user said. Another asked for last number redial. A third said enhanced data-handling capabilities are needed.

More than a few Centrex subscribers said they want to receive information on new equipment from their service providers or from the BOCs' equipment sales groups.

"I would like to have information mailed to me on an ongoing basis to keep me abreast of any new products," the user said.

In addition, survey respondents said they want a wider variety of Centrex station equipment. "We want a wider selection of feature and digital sets," one user said. Some hinted that they will look beyond the BOCs' customer premises equipment arm for alternatives.

"There is a definite need for the [BOC equipment sales firm] and the telephone company to work closer to meet customer needs and resolve system problems," one user said. ◼

N.Y. Tel. pioneers intra-LATA net

continued from page 13

carrier's virtual net service via switched facilities rather than dedicated lines.

Currently, users need a dedicated line from each office to access AT&T's Software-Defined Network, MCI Communications Corp.'s VNET or US Sprint Communications Co.'s Virtual Private Network Service. V Path will route calls to a long-haul carrier's virtual network point of presence via a switched line.

"It's uneconomical for a customer to order lines to every one of its locations," Hohl said. V Path enables users to connect sites that do not have the traffic to justify a dedicated access line to an inter-LATA virtual network.

V Path will initially be available in New York Telephone's downstate LATA, which includes the area south of Poughkeepsie. The service will be priced as an option to regular switched services, with usage fees of 11 cents for the first minute and five cents for each additional minute. Usage charges will not be distance-sensitive.

It will cost $20,000 to set up a V Path private network numbering plan data base. For $100 a month, users can order Service Management System service which will enable them to access the V Path data base via a Digital Equipment Corp. VT-100-compatible terminal and reconfigure call routing.

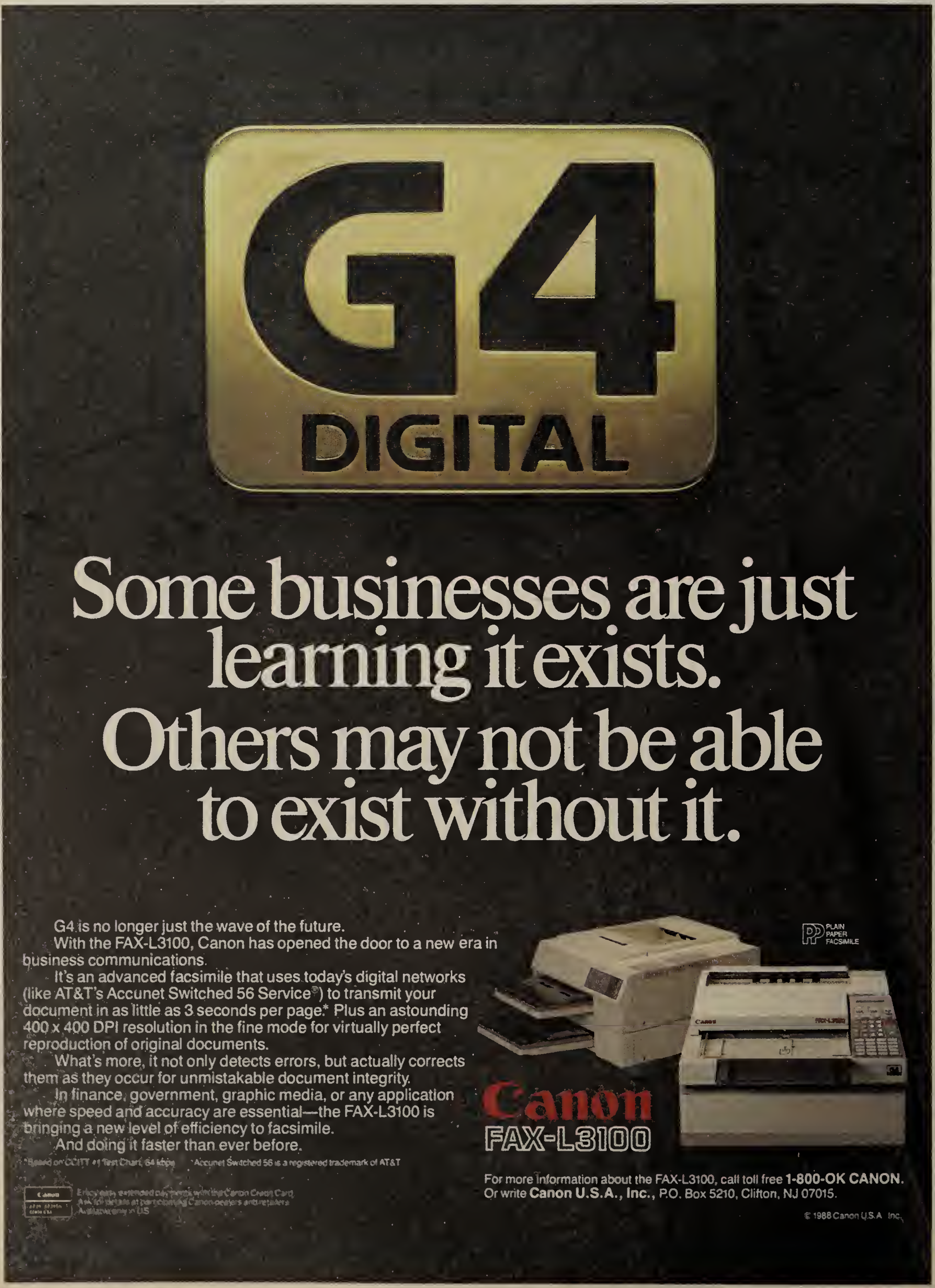
A V Path tariff filed by New England Telephone was rebuffed by the Massachusetts Department of Public Utilities (DPU) last July because of questions over how the service was priced. New England Telephone's tariff required a dedicated line to access V Path.

The Bell operating company also sought to price the service on a feature-based payment option (FPO) basis, which would have enabled it to negotiate with each customer to establish the access fees as well as the charges for the intelligence to complete private network calls via the switched network.

The DPU, however, disapproved that plan, saying an FPO would enable New England Telephone to charge V Path users lower network access and usage fees than it would charge the long-haul carriers that resell local access and usage services as part of their virtual private networks.

New York Telephone averted that problem by offering access to its V Path service via existing switched facilities and basing the charges on a usage basis.

New England Telephone is revamping its tariff and plans to refile it in early 1989, according to Charles Duffy, the BOC's V Path product manager. ◼



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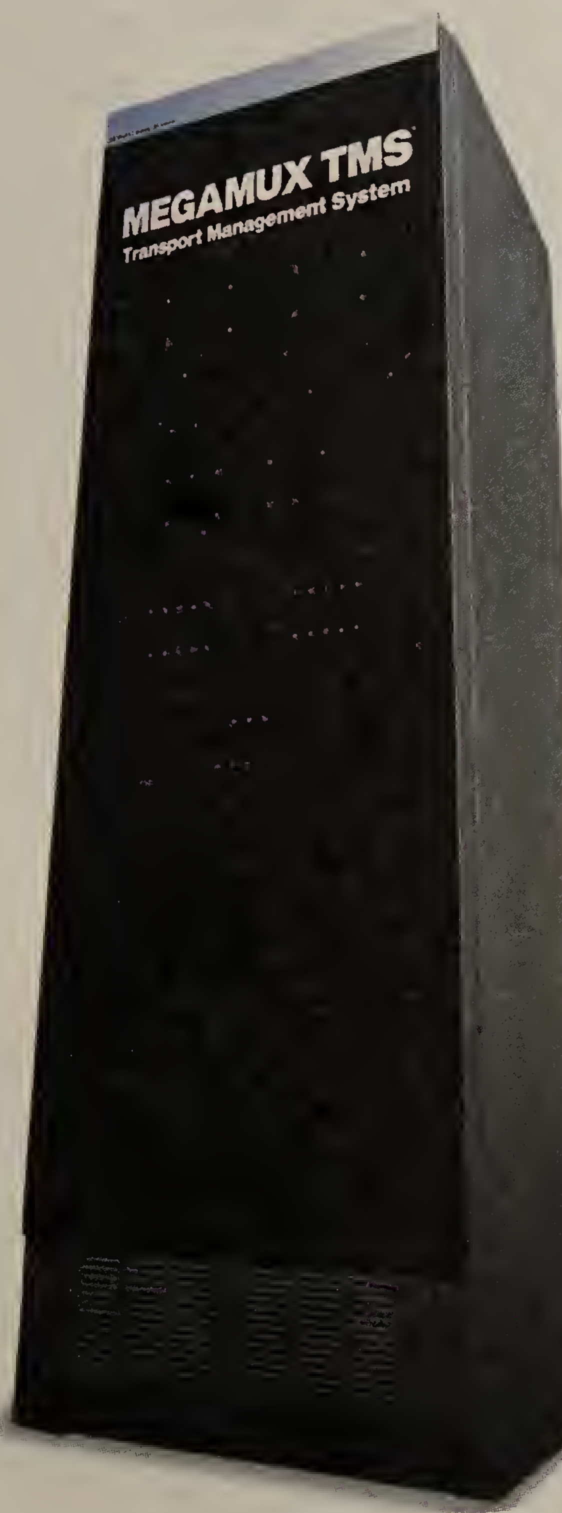

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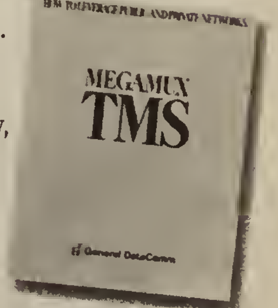

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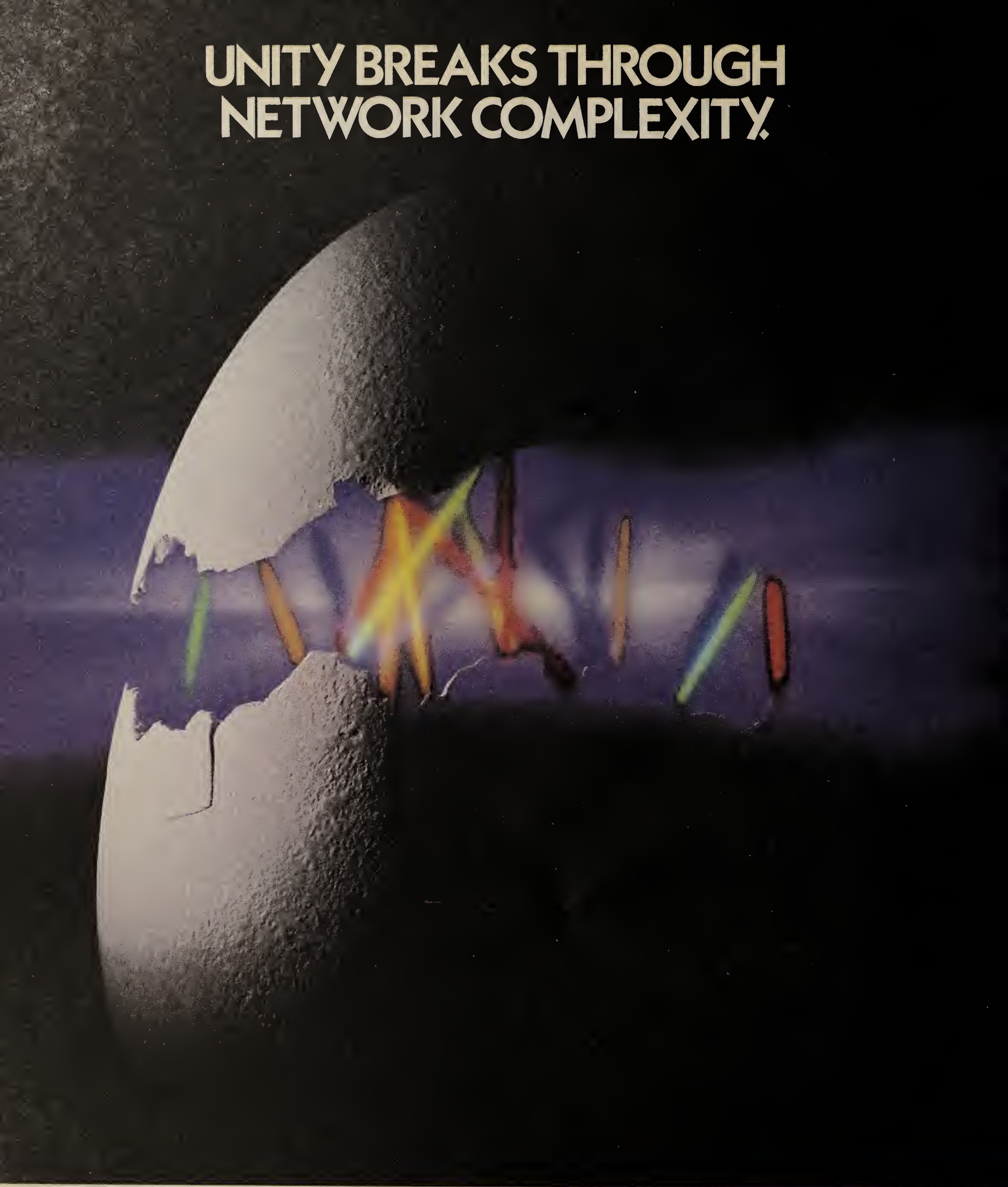
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"I don't think you can separate the market for V.32 and 9,600 [bit/sec] dial-up modems. It's really one big 9,600 dial-up market. And V.32 will become the predominant technology to satisfy that market."

Mary Schaller
President
Schaller Associates
Portola Valley, Calif.

Data Packets

Telenet Communications Corp. recently added four new file-transfer protocols to its Telemail messaging service and its PC Telemail software.

The new protocols are named XModem/CRC, YModem, YModem/Batch and Kermit. The first two are used for binary file transfers. YModem supports larger blocks of data than XModem, handling 1,028 bytes compared to 128 bytes. YModem/Batch allows users to send multiple binary files at the same time.

Kermit translates binary files between eight-bit communications devices and seven-bit ASCII devices, according to Telenet.

Telenet is located at 12490 Sunrise Valley Drive, Reston, Va. 22096, or call (703) 689-6000.

Data General Corp. recently introduced Dataplex, a data switch that can be used to connect asynchronous devices over twisted-pair telephone wire to DG's Eclipse MV minicomputers. Users of terminals attached to Dataplex will be able to access multiple hosts over a single cable, according to the firm.

Dataplex prices range from $13,528 for a 60-user system to $27,945 for 180 users.

For more information, write to DG at 3400 Computer Drive, Weston, Mass. 01580, or call (508) 898-4051.

BBN unveils PAD with ALC support for airline mart

By John Cox
Senior Editor

CAMBRIDGE, Mass. — BBN Communications Corp. recently announced a packet assembler/disassembler that supports the Airline Link Control (ALC) protocol.

The device, the C/10 ALC PAD, will enable airlines to use packet network facilities to support ALC-compatible reservation terminals instead of the multipoint leased lines normally used today.

The ALC PAD converts input from ALC-compatible terminals and printers into X.25 packets, which are then fed into BBN Communications' packet switches.

The PAD supports a single X.25 network connection at up to 19.2K bit/sec, and it provides an option that lets users support two network links at speeds up to 64K bit/sec.

On the terminal side, the device can accommodate up to eight line cards, each card supporting up to eight asynchronous or four synchronous ports.

Ports on the PAD can be configured using a menu-based system for creating, storing, displaying and changing PAD configurations. The configurations can be downloaded from a central location to any PAD on the network.

Most reservation networks employ mainframes and front-end processors to anchor multidrop leased lines that support a series of ALC terminal controllers. The ALC controllers, in turn, serve groups of reservation terminals and printers. Some of these systems have grown to include hundreds of devices per line. A break anywhere can take down the whole string.

The C/10 ALC PAD will enable ALC terminal users to be tied into a backbone packet network switch. Packet backbones provide for automatic rerouting around failed lines and nodes, the spokesman said.

SNA support coming

The next release of the C/10 ALC PAD will support both ALC and Systems Network Architecture protocols, according to a BBN Communications spokesman. This will enable the network to function as a multiple-application utility, the company said.

BBN Communications recently announced that Delta Air Lines, Inc. had awarded the company a $25 million to $30 million contract to complete Delta's data communications and reservation network.

Other buyers of its private net products include Japan Air Lines Co., Ltd. and SystemOne Corp., the data processing and communications subsidiary of Texas Air Corp.

BBN Communications, a subsidiary of Bolt Beranek and Newman, Inc., is located at 150 Cambridge Park Drive, Cambridge, Mass. 02140, or call (617) 873-3268.

New chipset could boost V.32 modem development

By John Cox
Senior Editor

AGRATE BRIANZA, Italy — SGS-Thomson Microelectronics recently announced a V.32-compatible modem chipset that could accelerate development of fast, low-cost, dial-up modems.

The chipset includes three digital signal processors (DSP) and three modem analog front-end chips. In OEM quantities, the chipset is priced at $150, a cost that could result in 9.6K bit/sec V.32 modem products in the $800 range, according to Luc Mary, telecommunications strategic marketing manager for SGS-Thomson, which is headquartered here.

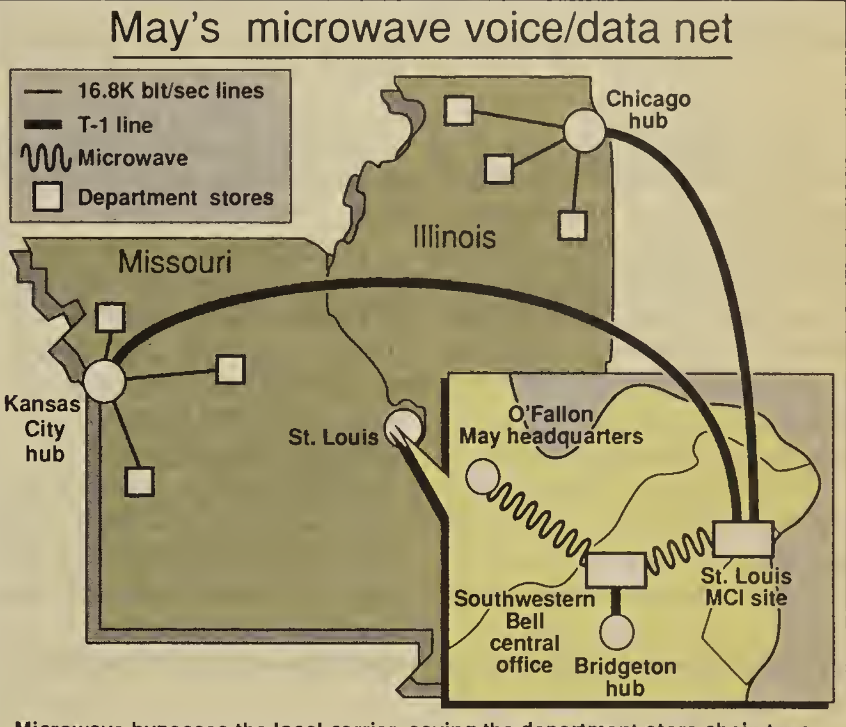
The average V.32 modem today costs more than $2,000, and nonstandard 9.6K bit/sec modems cost roughly $1,000, according to Mary Schaller, president of Schaller Associates in Portola Valley, Calif., and author of a recent study of the high-speed dial-up modem market.

By Schaller's reckoning, integrated circuits from SGS-Thomson and other semiconductor firms, coupled with user desire for faster modems, will drive prices for these devices even lower, to an average price of just $675 by 1992.

While SGS-Thomson is neither the first nor the only semiconductor firm contributing to this dramatic shift, the price of its product is lower than any other V.32 chipset on the market, according to Schaller.

V.32 is the Consultative Committee on International Telephony and Telegraphy recommendation for full-duplex dial-up communications at 9.6K bit/sec over two wires. The recommendation is 7 years old, Mary noted,

(continued on page 20)


May's microwave voice/data net

Microwave bypasses the local carrier, saving the department store chain tens of thousands of dollars monthly. The network links 2,600 POS terminals in 76 stores in 7 states.

SOURCE: MAY DEPARTMENT STORES CO., O'FALLON, MO.
GRAPHIC BY SUSAN J. CHAMPENY

Store chain designs network safety plan

Innovative scheme protects year-old microwave net against earthquakes and other disasters.

By Bob Brown
Senior Writer

O'FALLON, Mo. — As the busy holiday season draws near for May Department Stores Co., Manager of Telecommunications Tony Leech is preparing for the worst.

Leech and his department are putting the finishing touches on a recovery plan designed to safeguard May's year-old microwave network against disaster. A vulnerability assessment, conducted after the company installed a microwave net to bypass the local carrier, persuaded management it needed such a plan.

The project is taking on urgency as the holidays draw near. Between Thanksgiving and Christmas, the company's communications department abides by an "If it's not broken, don't touch it" policy. The company cannot afford to risk implementation problems during the holidays, so all work must be done either before or after this period, Leech said.

May operates a chain of 76 discount department stores, called Venture Stores, that are located in seven midwestern states.

The stores are linked to regional hubs in Chicago, Kansas City, Mo., and Bridgeton, Mo., with multiplexed data and voice lines. Using terrestrial lines, the hubs are linked to two microwave network sites that transmit through repeaters back to headquarters.

The Chicago and Kansas City hubs feed an MCI Communications Corp. site in St. Louis, while the Bridgeton hub is connected to a nearby Southwestern Bell Telephone Co. site.

While the links between hubs and stores are important, the voice and data microwave links to headquarters are most vital, Leech said. May supports the equivalent of eight T-1 links on the microwave routes.

May's headquarters microwave antenna is located on top of a 500,000-gallon water tower next door.

The microwave link is passed through two repeaters on the way to the Southwestern Bell and MCI sites; one repeater sits atop a 120-ft. tower, and the other is on a St. Louis hospital roof.

If an earthquake (May headquarters is located near the New Madrid Fault), off-target airplane or lightning bolt were to knock down one of the sites supporting May's microwave equipment, Leech would be ready.

To ensure that the microwave network can be restored quickly, May bought a mobile "crank-up" microwave tower that can be used as a replacement for a downed tower. The company also bought four spare Loral TerraCom Corp. microwave radios.

The spare tower, stored in the parking lot, would be transported on a trailer to the temporary site, erected using its electric winch and affixed with guide wires, Leech said. May bought the tower from Aluma Tower Co. in Vero Beach, Fla.

Although the firm could have bought a freestanding replacement tower, such a structure

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Acer intelligent terminal offers X/Windows support

Vendor takes aim at OEMs, systems integrators

By John Cox
Senior Editor

SAN JOSE, Calif. — Acer Counterpoint, Inc. last week introduced an intelligent terminal that incorporates support for X/Windows, Ethernet and advanced net software, including Transmission Control Protocol/ Internet Protocol and industry-standard file-transfer software.

The new Acer Xebra Model 100 is the first in a new terminal line that can be used as an upgrade for existing ASCII terminals or as an alternative to more costly microcomputer workstations, according to Pauline Lo Alker, president of Acer Counterpoint.

The Space Systems Division of Lockheed Missile & Space is buying Xebra terminals for both internal use and for outside systems integration projects.

▲▲▲

Acer Counterpoint, a subsidiary of Acer Corp., a Taiwan-based microcomputer manufacturer, is targeting the new device primarily at OEMs and systems integrators. The company expects these target companies to feature the terminal in contract bids beginning early next year.

The Xebra Model 100 features a 10-MHz Intel Corp. 8086 microprocessor and 640K bytes of random-access memory. It comes equipped with a built-in Ethernet controller that can support either thick or thin coaxial cable.

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An additional 512K bytes of read-only memory contains X/Windows Server software and TCP/IP code, including the Telnet protocol for remote logon to hosts and the File Transfer Protocol for file transfer.

There is also one parallel and one serial port, a 110-key keyboard combining features of the Digital Equipment Corp. VT-100 and IBM Personal Computer AT, a three-button mouse and a 14-in. IBM standard monochrome graphics monitor with a resoluton of 640 by 480 pixels.

This combination of features will enable terminal users on Ethernets to have the type of user interface, windowing and graphics capabilities typically found only on much more expensive workstations, Alker said.

Xebra users will be able to access X/Windows-compliant applications on any host that also supports X/Windows and TCP/IP, Alker said.

X/Windows is a public domain specification developed by the Massachusetts Institute of Technology for windowing in a multivendor network environment, she explained.

Through X/Windows, a Xebra user can simultaneously access and run different applications on different hosts attached to the network without needing to know where the applications reside, she said.

X/Windows has been endorsed by a number of computer builders and software developers, including DEC, which has announced that X/Windows will be the basis of its yet-to-be-released DECwindows, the user interface for its workstations.

The new Xebra terminals implement the server component of X/Windows, allowing access to X/Windows-compatible applications on host systems supporting the X/Windows client, Alker said.

One early Xebra customer is the Space Systems Division of Lockheed Missile & Space Co., Inc. of Sunnyvale, Calif. The division is buying the terminals for both internal use and for outside systems integration projects, according to Andrew Trice, manager of system support for the Space Systems Division.

The anticipated acceptance of X/Windows and the availability of graphics capabilties in a low-cost terminal were attractions, he said. Another attraction was the choice of connectivity options.

One drawback of the Xebra is its relatively low-resolution monitor, Trice said. "I'd like to see much higher [resolution]," he said. But the Xebra fits nicely between the very high-end technical environment, dominated by display processors and sophisticated graphics workstations, and the low-cost, low-resolution business machines, he said.

Trice said the Xebra is similar to a diskless workstation. The Intel processor, combined with the RAM and ROM, provides local horsepower without the additional hardware and costs of a stand-alone microcomputer, he said.

Although Alker said the company may release a Xebra diskless workstation in the near future, the Model 100 operates as a true terminal. Diskless workstations execute applications locally, whereas the CPU in the Model 100 is used to support network and windowing functions, she explained. The applications accessed by the Xebra operator reside on a network host.

While it has no operating system, the terminal's X/Windows server uses a DOS kernel, she added. The combination would enable future models to download and run DOS applications, but Alker declined to say whether the company plans to release such capabilities.

Alker said she thinks users increasingly want standards-based user interfaces, transparent network access and a terminal alternative to expensive microcomputers. "Workstations are still $4,000 to $5,000 per seat," she said.

Microcomputers are not always the best alternative, she argued. Users often have to assemble the different pieces to create a functional workstation.

But Xebra will not be the answer for all the questions facing users, said Lockheed's Trice. "What is yet to be determined are the performance issues of using an X/Windows terminal," he said. "But then, you can't do graphics on an ASCII terminal."

Finally, the number of applications that support X/Windows is limited. Alker said she is optimistic that many more applications will quickly become available as more developers embrace X/Windows.

But Trice is not so sure. "Porting fairly sophisticated graphics applications into X/Windows takes about 10 man-months," he said. "I know that because I'm experiencing that right now."

The Xebra Model 100 is priced at $995 in small quantities.

Acer Counterpoint is located at 2127 Ringwood Ave., San Jose, Calif. 95131, or call (408) 434-0190. ◾

Chipset could boost modem

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but few modems incorporate it, and those that do are relatively expensive.

The chief problem, both Mary and Schaller agree, has been the issue of echo cancellation. Dial-up 9.6K bit/sec modems are psuedoduplex, not full-duplex, Schaller said. The modems send data in one direction, then quickly turn the line around to send in the other direction.

The V.32 standard provides full-duplex 9.6K bit/sec transmission using echo cancellation. Echo cancellation employs the same 3-kHz frequency to send and receive and enables the receiver to differentiate between incoming and outgoing data. The calculations needed to perform this task are complex, the SGS-Thomson officials said.

With the new SGS-Thomson chipset, one DSP is dedicated to echo cancellation, a second is dedicated to the receive function, and the third supports the transmitter, the start-up and retrain procedures, and the interface to external microprocessors.

Embedded software implements the full V.32 specification, according to Mary. And SGS-Thomson plans software upgrades next year that will allow the same chipset to implement the lower speed V.22bis specification, eventually giving a single modem the capability to handle a variety of transmission standards, he added.

32-bit instruction set

The use of a 32-bit instruction set allows twice as many functions to be performed within the same instruction cycle compared with what is possible with the typical 16-bit instruction set, according to Mary. SGS-Thomson is the first to offer a 32-bit capability, he claimed.

Schaller said that, for users, the benefits of V.32 are clear: faster transmission speeds, higher throughput and the use of cheaper dial-up lines instead of leased lines.

But until recently, implementing V.32 has been difficult, according to Schaller, who formerly was director of marketing for Telebit Corp., a developer of fast dial-up modems.

"It requires a heck of a lot of code and several digital signal processing chips that were not cheap," she said. One V.32 modem maker used eight DSP chips to do the echo cancellation, she said. "That's over a thousand dollars just in product costs."

Most of the modem makers serving the high-speed dial-up market have opted for a less expensive route — offering 9.6K bit/sec performance but sacrificing V.32 compliance. These modems typically fall into the $1,000 price range.

Demand growing

But the demand for standards-compatible devices has been growing, said Schaller. Some nonstandard vendors have found themselves almost entirely shut out of Fortune 50 sites because they do not support V.32, she added.

This demand will radically and rapidly alter the high-speed dial-up market, Schaller said. By 1992, she predicted, less than 25% of the market will be composed of nonstandard modems, compared with 75% today. ◾

Store chain designs safety plan

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would not do much good if an earthquake ruined the original tower's foundation, Leech pointed out.

To make sure the company will be able to put the tower up after a disaster, Leech has a list of five tower erector outfits that can be called on, and three sets of May technicians from different states are lined up to help get the network back on track. He also has copies of Federal Communications Commission documents needed to request temporary licenses for microwave sites.

"We feel that, realistically, we can be back on the air in 24 hours with the backup tower," Leech said.

Although the disaster recovery plan was necessitated by the move to microwave, Leech claims the whole project was worth it. Bypassing the local carrier with the microwave network is saving May tens of thousands of dollars a month, Leech said, though he declined to give exact figures.

The company's microwave network, worth hundreds of thousands of dollars, will pay for itself in less than two years, he added. "Justifying the network was not hard," Leech said.

Besides savings, however, Leech said May opted for the microwave setup because its telephone company network was too often disabled by local construction activity.

May stores house 2,600 point-of-sale terminals, plus other computer terminals and peripherals, he said. The network is used for a number of applications, including payroll, credit authorization and customer service, Leech said.

"If we lose our microwave links, my company, for all intents and purposes, is dead in the water," Leech said. "When you're talking eight T-1 lines, it's going to take you a while to restore those facilities. The store could function for a while, but we would lose some functionality in our customer service connections, and that is important to us.

"If something happens [to our network]," Leech said, "we have to be able to recover within 24 hours." ◾

LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

SynOptics Communications, Inc. recently announced a deal with Adaptec, Inc. to integrate SynOptics' 10M bit/sec, unshielded twisted-pair LattisNet transceiver chip into Adaptec's Small Computer Systems Interface for Apple Computer, Inc.'s Macintosh and IBM's Personal Computer and Personal System/2 microcomputers.

Netnotes

Interlan, Inc. last week introduced a controller that allows IBM Personal System/2 Models 50, 60 and 80 to be linked to Ethernets using unshielded twisted pair.

The NI9210-UTP controller, which works with the Personal System/2 models' Micro Channel bus, uses an on-board SynOptics Communications, Inc. transceiver that provides the interface to existing telephone wiring and provides an attachment unit interface connection that works with external IEEE 802.3-compatible transceivers.

The controller also provides 16K bytes of random-access memory for packet buffering as well as software for diagnostics. The controller is priced at $595.

For more information, contact Interlan at 155 Swanson Road, Boxborough, Mass. 01719, or call (508) 263-9929.

Walker Richer & Quinn said last week it has begun shipping its 3270 FileExchange, which is an asynchronous file-transfer package compatible with IBM's microcomputer-to-host file-transfer package called IND$FILE.

The personal computer-based FileExchange, which is priced at $99, works with the company's Reflections software to establish communications with the mainframe-

(continued on page 25)

Net General, Sytek offer new Sniffer

By Wayne Eckerson
Staff Writer

MOUNTAIN VIEW, Calif. — Network General Corp., in a joint agreement with Sytek, Inc., last week announced new versions of Network General's Sniffer protocol analyzer for use with broadband local networks.

In addition, the two companies announced an agreement that allows Sytek to resell the full line of Sniffer products. The new Sniffers will work with Sytek's LocalNet 6000 broadband local networks, Sytek's broadband Ethernets and IBM's broadband PC Network.

The Sniffer is a hardware and software package that monitors and collects network protocol information and pinpoints network problems. Network General used Sytek's 6120 and 6130 broadband network interfaces and Sytek software to build the new versions.

The broadband Sniffer will be available in two models. The Series 300 supports the original IBM PC Network broadband frequencies, T14 transmit and J receive. The Series 500 supports LocalNet 6000 and three new broadband frequencies, T14/N, 2'/O and 3'/P.

According to the company, the product can be used to troubleshoot broadband networks supporting numerous local network protocols, including Transmission Control Protocol/Internet Protocol, Digital Equipment Corp.'s DECnet, IBM's PC Network, Banyan Systems, Inc.'s VINES and Novell, Inc.'s NetWare.

Besides the announced broadband networks, Sniffer protocol analyzers work in Ethernet, token ring, Arcnet and Starlan local network environments.

Pricing for the Sniffer ranges from $15,750 for the 300 Series to $24,000 for the 500 Series. Add-on boards begin at $12,000. Add-on protocol interpreters are priced from $995 to $1,995. ◻

Vitalink WAN control tool for 802-based nets debuts

Product lets remote VAX monitor bridged LANs.

By Wayne Eckerson
Staff Writer

FREMONT, Calif. — Vitalink Communications Corp. recently introduced a network management system that can be used to manage geographically dispersed IEEE 802-based local networks linked with bridges into a wide-area network.

The system, dubbed 802 WANmanager, enables a user to monitor and control several network nodes at the same time from a remote Digital Equipment Corp. VAX workstation.

The system supports IEEE 802.3 Ethernet and IEEE 802.5 token-ring local networks connected by Vitalink's TransLAN bridge, which supports links from one local network to another at speeds up to 2.048M bit/sec, the European T-1 speed.

The software builds on Vitalink's previous network management system, known as Vitalink Management Services, and on the net management capabilities of Vitalink's TransLAN bridges.

The 802 WANmanager software runs on any VAX using the Ultrix operating system.

Using a mouse, icons and pull-down menus from a VAX workstation, network operators can access several bridges at the same time to monitor traffic and perform statistical tests in different areas of the network.

Besides Vitalink's TransLAN bridges, 802 WANmanager can support DEC's LAN Bridge 100, a local bridge for connecting Ethernets, and ChipCom Corp.'s Ethermodem III, a local bridge for connecting baseband and broadband Ethernets. The software also lets an operator reconfigure default parameters on the bridge, such as filter or speed settings, from a remote location.

The 802 WANmanager package incorporates X/Windows software, which makes the system easier to use than Vitalink's previous network management system, according to the vendor. The software allows the user to view as many as six multilevel screens at the same time and presents data in graphical form on the color console.

The system's primary display is a topological map of the network that presents network nodes and links in contrasting colors. To access any one of the bridges, the user points the mouse at the node's corresponding icon on the screen and clicks. Pull-down menus allow the user to perform as many as 50 different operations while at a node, according to the vendor.

Unlike the old system, the 802 WANmanager system can record the number of frames sent, frames received and frames with

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Corvus net software embraces standards

Company makes attempt to break away from proprietary past, reports improved financials.

By Bob Brown
Senior Writer

SAN JOSE, Calif. — Corvus Systems, Inc. last week introduced a new version of its local network operating system software that marks the company's first attempt to provide products that run on industry-standard networks.

In a separate announcement, Corvus reported first-quarter results that show progress in the company's struggle to get out from under Chapter 11 bankruptcy protection, which it filed for in June.

Corvus, a local network maker whose products include the Omninet local network and PC/NOS operating system, said its new PC/NOS 2.0 local network operating system is a step away from the company's proprietary past, which many observers blame for its descent into Chapter 11.

The new operating system runs on Omninet, Arcnet, Ethernet and token-ring networks, said William Halford, vice-president of sales and marketing at Corvus.

"This opens up the market for PC/NOS to a great extent," Halford said. "This is the first time we've said, 'OK, our products will play with other peoples' products.' Prior to this announcement, we could only sell it on our own network."

The combination of hardware becoming a commodity business and software being more profitable contributed to Corvus' change in product strategy, Halford said.

"We are willing to open up the architecture to run on other networks, even though potentially we could lose some Omninet sales," he said. "But the upshot of selling more software will far outshadow that."

Like the previous version, PC/NOS 2.0 eliminates the need for a centralized file server by providing distributed resource sharing. Users at any node on the network can share files, printers and modems. The product also provides Network Basic I/O System emulation to accommodate gateways into IBM's Systems Network Architecture and X.25 net-

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LANMARKS

BY MICHAEL HARRIS

Advancements in off-line data storage for LANs

One of the toughest challenges faced by local network administrators is management of data storage systems. Although system supervisors typically manage the security and backup of shared data bases, most local network users are responsible for data stored on their own private, local disk drives. Much of this data is at risk because of its exclusion from daily system backups.

There are two common techniques for backing up data on local networks. One method calls for the installation of a tape drive at each file server, requiring the server to be shut down while its data volume is copied.

This technique is cumbersome because one tape system cannot handle data volumes from multiple servers, thus it adds administration overhead to each backup task. For example, with this method, all users must be logged off the network before backup can begin. In a widespread, multiple-server environment, this task would result in a great deal of system downtime.

The second and most commonly used approach to local network backup calls for the installation of a single tape-backup subsystem at a central network workstation. Each file server that can be accessed from this workstation can be backed up to the tape subsystem. With this approach, file servers are never shut down, and backup jobs can be preprogrammed. Use of this

(continued on page 24)

Harris is product marketing manager at San Diego-based Emerald Systems Corp., a manufacturer of network data storage systems.

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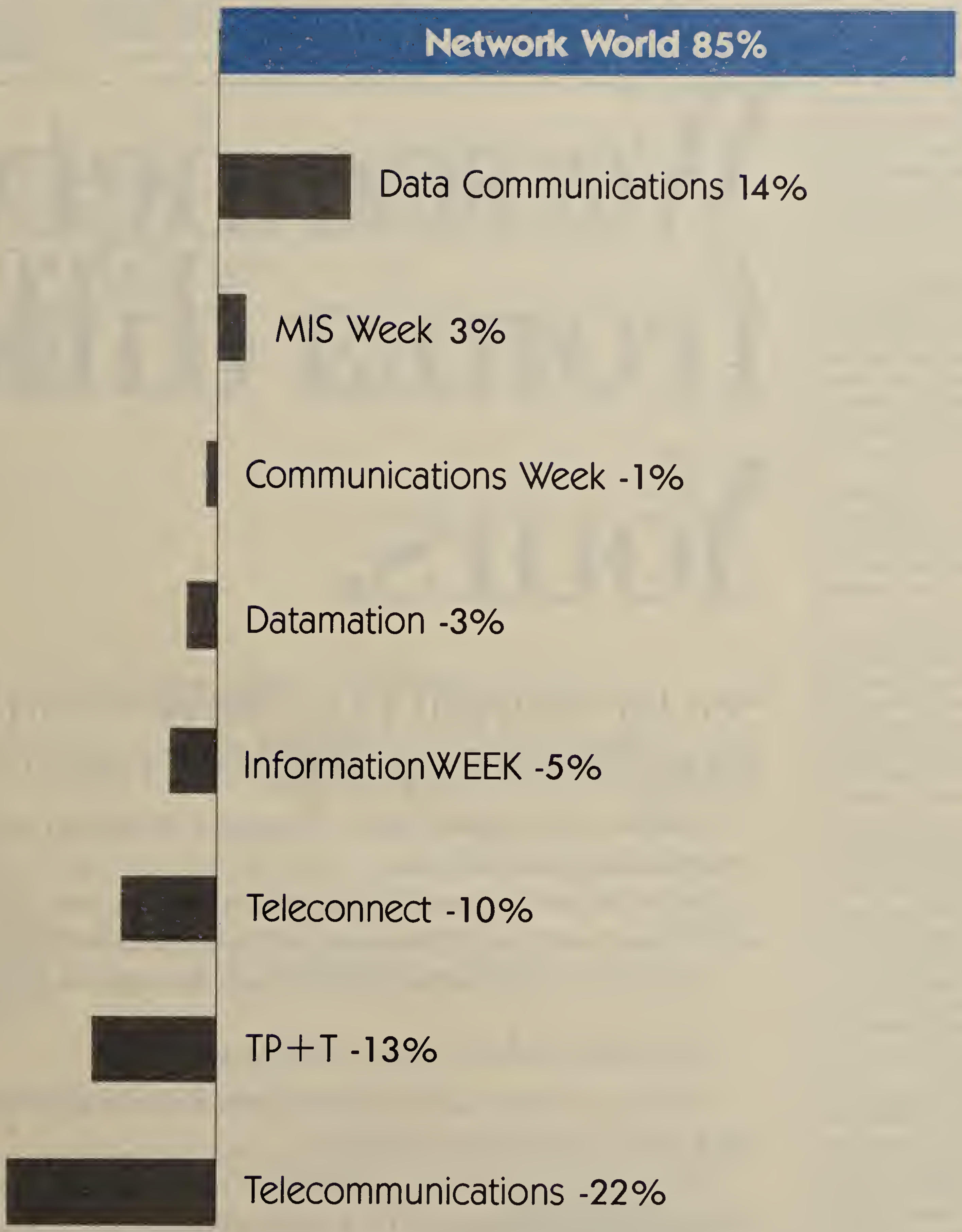

Source: Adscope, Jan.-Sept. 1987 vs. Jan. - Sept. 1988.

Advancements in data storage for LANs

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technique sharply reduces the administration burden. But the question that arises when considering either of these techniques is: "How do you secure the local data stored on individual personal computers?"

Securing data is not an option. It is a corporate requirement. All data, even information saved on users' local hard disks, must be taken into account in a well-planned disaster recovery program.

Two procedures have evolved in response to this need. The first option involves porting an external tape drive from one microcomputer to another until each local disk is backed up. The second option is more cumbersome. With this method, the system manager must copy local disk volumes across the network to a file server disk. When the file server volumes get processed in the normal backup cycle, the transferred data is backed up as well. Utilization of either of these techniques usually leads to a bad habit: avoiding backup of local data altogether.

A new solution to LAN backup

In order to help ensure that data on removable media is secured, an easy-to-use backup system must be developed that has high enough capacity to process many user data requests. By leveraging the latest enhancements in networking technology, it is possible for developers to create such a backup system.

It is natural for users to avoid backup because it is not viewed as a productive task. The challenge to developers is to provide a product that encourages users to run backup by making this essential function easy.

In an ideal setting, tape storage systems would be installed on a file server or network bridge and would accept backup requests from any connected workstation. Users with local disk volumes would simply access the tape backup server and run a backup just as if the tape storage system was installed on the user's own microcomputer.

Similarly, users and system administrators could access the shared tape device and execute backups of file server data. With this concept, any file server or local disk data that can be accessed by the user can be saved to a single tape backup server. Of course, a system with such wide-scale accessibility must also have sufficient capacity to handle the potential work load created by many users backing up hundreds of megabytes of data.

Typical multiserver local network environments have more than 200M bytes of shared disk space. In addition, nearly 30% of all networked microcomputers have a local hard disk installed. With such large volumes of information, conventional ¼-in. tape technology cannot adequately provide complete local network backup services.

Conventional ¼-in. tape is the standard tape backup for microcomputing, but it is currently limited to 150M bytes per cartridge.

Some vendors have promised capacity improvements to 300M bytes, but this can be achieved only by increasing the length of the media and the current 8,000 bit/in. density.

Both of these processes stretch the limits of the original ¼-in. tape design, which has already seen capacity increases of 750% since its creation. Further attempts to increase capacity will completely overwhelm its linear recording foundation.

Of all the off-line data storage technologies available today, only two can support the capacity demands of large-scale networking: optical disk and helical-scan recording.

Optical disk systems have single-platter capacities starting at 200M bytes and increasing up to the gigabyte range. These subsystems can easily back up the data volumes in most network environments. But the media cost is still very high, and only write-once/read-many optical subsystems are readily available. This means that once a platter is used for backup, it cannot be reused when the backup copy becomes obsolete.

Storage capacity and media

In order to fully exploit the power of a shared tape-backup server, the system must have storage capacities in the gigabyte range and provide the user with inexpensive, reusable media.

Tape systems based on helical-scan recording technology provide all of these features. With a recording density of more than 40,000 bit/in., the helical-scan design is a natural one for the growing needs of the local network market because it is specifically geared for high-capacity, rewritable backup services.

The objective is to encourage local network users to better manage their data. This can be accomplished only when data backup systems conform to the user's overall networking needs.

The combination of high-capacity, helical-scan recording and the specialized software functionality of the tape backup server creates an ideal network data management solution.

Vitalink control tool for 802 nets debuts

continued from page 21

errors received that are transmitted across the bridge. It also can record frames on the net that do not pass through the bridge.

The price of the 802 WANmanager software is $30,000, and it is available now. Vitalink also offers a turnkey package that contains both the 802 WANmanager software and a DEC VAXstation 2000, a MicroVAX system that has a hard disk, internal memory, a tape drive and a color monitor.

A DEC warranty and maintenance program come with the VAX hardware. Training for the software is offered by Vitalink, and DEC offers training for the hardware.

Vitalink is located at 6607 Kaiser Drive, Fremont, Calif. 94555, or call (415) 794-1100.

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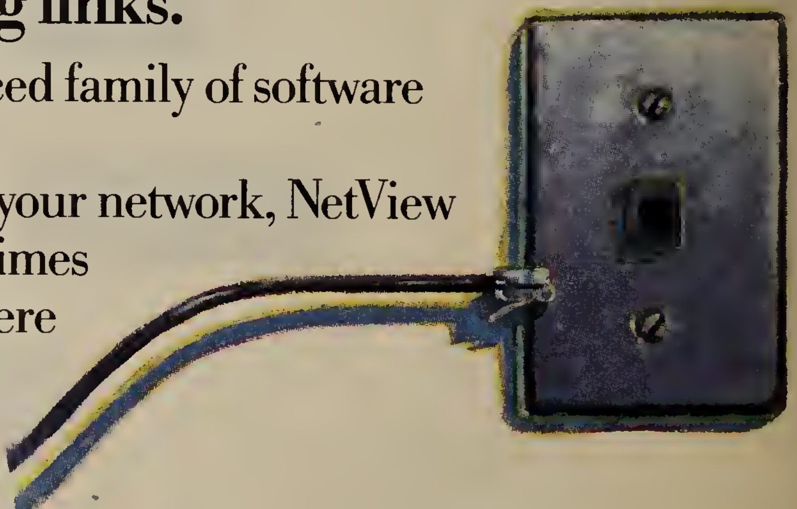

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Netnotes

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based IND$FILE software for batch and single-file transfers.

Walker Richer & Quinn is located at 2825 Eastlake Ave. E., Seattle, Wash. 98102, or call (206) 324-0350.

Gateway Communications, Inc. announced that its family of wide-area networking products is compatible with Novell, Inc.'s recently introduced Advanced NetWare Version 2.12 and System Fault Tolerant NetWare Version 2.12 operating systems.

Gateway's G/X25 Gateway, G/SNA Gateway, G/Async Gateway and G/Remote Bridge products allow multiuser access from any NetWare-based local network to a variety of mainframes and public data networks.

Prices for all of the products remain the same: the G/X25 Gateway is priced at $1,695; the G/SNA Gateway costs $2,580; the G/Async lists for $1,440; and the G/Remote Bridge is priced at $1,595.

Contact Gateway Communications at 2941 Alton Ave., Irvine, Calif. 92714, or call (714) 553-1555.

LAN Systems, Inc. has reduced the price of its LAN Shell network menuing systems from $695 to $495 per file server.

The price cut is designed to make LAN Shell reach a wider potential user base, according to James Rosen, vice-president of the company's Network Products Group. LAN Shell is compatible with all major network packages, including Novell, Inc.'s NetWare, IBM's PC Network, 3Com Corp.'s 3+ and Banyan Systems, Inc.'s VINES. ◘

Corvus net software embraces standards

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works. NETBIOS applications can run on top of PC/NOS 2.0 as well.

The new operating system, like the original version, supports an unlimited number of nodes, whereas some competing entry-level local network operating systems support a limited number of nodes, Halford said.

The PC/NOS 2.0 price of $695 serves as a license fee for all nodes on a network, in contrast to some other operating systems that are paid for by the node, he said.

A major new feature of PC/NOS 2.0 is the NosTalk asynchronous communications software. The communications package, which is included in the base product price, allows modem sharing and pooling, automatic dial-up and a hot key to DOS for resource sharing across the network, Halford said.

The software also provides network management functions via its Virtual Console feature, which enables a PC/NOS 2.0 network to be managed from any node on the network.

First-quarter financials

In the financial arena, Corvus reported sales of $4.36 million and a net loss of $696,000 for its first fiscal quarter, which ended Aug. 31.

Compared with the previous quarter, sales rose nearly 30%, from $3.36 million, and losses fell about 82%, from $3.79 million.

When compared with the corresponding quarter for the previous year, Corvus' first-quarter sales were down 47%, from $8.18 million, and earnings tumbled 250%, from $273,000.

According to Joseph Rooney, Corvus' president and chief executive officer since June, a significant portion of the revenue recorded in the latest quarter can be attributed to the sale of network interface cards and operating system software to Amstrad PLC, a manufacturer of personal computer clones based in Essex, England.

According to one analyst, although Corvus has stemmed some of its losses and has one or two good products, the company needs to accommodate other systems to increase sales.

"It appears as though Corvus is trying to become an $18 million to $20 million company, but that probably will not be enough for it to survive in a competitive market," said the observer, who requested anonymity.

Corvus said sales in the first quarter decreased compared with the first quarter a year ago for a number of reasons. These reasons included the company's decision to discontinue sales of stand-alone microcomputer products; price reductions by manufacturers of competitive products, particularly hardware products; and the company's price reduction for its older networking products in response to increased price competition.

"Sales for the quarter were also adversely impacted by customer uncertainty about the company's financial situation prior to its filing for relief [under Chapter 11]," Rooney said.

Under terms of the bankruptcy filing, the company is required to submit a reorganization plan by the end of October for approval by its creditors and a federal judge. The company may file for an extension, however, a spokesman said.

Corvus sees itself as having two basic options for escaping Chapter 11: either raise enough cash to pay its debts or merge with a suitable partner ("Corvus weighs its options after filing for Chapter 11," *NW*, Aug. 22).

J. Scott Haugdahl, senior systems specialist at Architecture Technology Corp., a Minneapolis-based consulting firm, said Corvus' problems stem from its decision to retain a proprietary architecture.

"The thing that amazes me the most is that, even to this day, Omninet has been kept a proprietary technology," Haugdahl said. "They did not recognize that they should have opened it up. Omninet could have become the Ethernet or the Starlan of the low-end networks."

While Corvus has "a decent customer base," that base is not growing because of user uncertainty over the company's future, Haugdahl said. ◘

management
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MANAGEMENT STRATEGIES

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Worth Noting

More than 80% of Unix users believe they made the right decision in buying the operating system and would do so again, according to a survey of 60 randomly selected Unix installations conducted earlier this year by Norwell, Mass.-based CAP International, Inc.

Association Watch

The **Corporation for Open Systems (COS)** is sponsoring a four-day conference on user strategies for migrating to Open Systems Interconnection from Nov. 29 to Dec. 2 in McLean, Va.

According to conference organizers, a series of tutorials at the event will focus on answering the question, "How does the user plan and implement a strategy for integrating OSI products into an existing environment while at the same time protecting investments in existing technology?"

Among the topics explored at the event will be "The Role of ISDN in OSI," "OSI Connectivity Solutions in an SNA Environment" and "Issues in Transition and Coexistence from TCP/IP to OSI."

Attendance at the conference costs $990.

For further information, contact Advanced Computing Environments at (415) 941-3399.

The **Data Processing Management Association (DPMA)**, a users group composed of more than 40,000 information professionals, announced that it has joined the Corporation for Open Systems as an affiliate associate member.

Affiliate associates are organizations like users groups and universities, as well as individuals, that want to work with COS. DPMA joins the ranks of such COS affiliate

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Travelers embarks on ISDN trial

By Barton Crockett
Senior Writer

HARTFORD, Conn. — The Travelers Corp. recently kicked off an ISDN service trial at its headquarters here involving 12 Basic Rate Interface lines provided by Southern New England Telephone Co. (SNET).

According to Gus Bender, second vice-president of telecommunications, Travelers plans to use Integrated Services Digital Network "initially for Centrex enhancement, improving operator consoles and integrating voice mail with Centrex. If this trial is successful, we will look for other applications."

Bender added, however, that any expansion will involve only niche voice applications.

"We don't really envision using ISDN for data. ISDN has a bandwidth limitation of 64K [bit/sec], which is much less than our wide-area and local-area networks," he explained. "Eventually, these will all be T-1 and token ring."

Bender said ISDN will be most helpful in improving service for Travelers' 14,000 Centrex lines.

By using the ISDN D channel, Travelers' AT&T Audix voice mail system will be able to interact with the SNET 5ESS central office switch used to support the insurance company's Centrex. This will let Audix notify users that they have waiting messages by giving them a broken dial tone.

Bender said this feature is impossible unless the voice mail system is able to exchange data with the Centrex serving office or private branch exchange.

The ISDN lines will also support advanced telephones with features such as single-button call forwarding and displays that give the name and telephone number of incoming callers.

A SNET spokesman said that Travelers is one of several firms experimenting with SNET ISDN services, although SNET had never previously acknowledged that it was involved in ISDN trials. The spokesman said the company is using these "joint customer research projects" to figure out what kinds of ISDN services it wants to sell. SNET has not tariffed any ISDN services.

Bender said that Travelers' ISDN trials complement another major effort by his company to build a nationwide network of leased fiber T-1 lines. This net will eventually link about 300 of the company's offices nationwide, carrying both voice and data traffic. Bender said the net should be finished in about three years. Currently, Travelers operates a data-only private net with a mixture of T-1 and 56K bit/sec lines.

Chrysler bets on VSAT net to win edge, speed repairs

By Barton Crockett
Senior Writer

HIGHLAND PARK, Mich. — Chrysler Corp. recently awarded a contract to Hughes Network Systems, Inc. for a 6,000-node VSAT network that will support several new strategic applications, including a way to use mainframes in its headquarters here to help repair cars at local dealerships.

The repair application is one of several Chrysler hopes to implement over the next few years on the very small aperture terminal network, which will replace its aging X.25 packet network. Chrysler expects to complete the migration to the satellite service by 1990.

According to Nick Simonds, executive director of MIS at Chrysler, the effort has strategic implications for the automaker. "We think this network is very, very significant," he said. "I truly believe it gives us a competitive advantage."

The satellite network will include a master earth station at Chrysler headquarters here and a single VSAT dish at each of more than 6,000 dealerships in North America. The network will support a single 9.6K bit/sec data communications line to each dealer and an optional one-way video feed.

Some advantages Chrysler could enjoy from the net are apparent in the car repair application. "Cars are really more computers now than anything else," Simonds said. "You really can't fix one in your garage anymore. You've got to be computerized."

In the car repair application, IBM Personal System/2 microcomputers at service centers will use software Chrysler is developing to analyze car problems.

The microcomputers are actually plugged into a car's engine. They analyze problems in electrical and computerized car systems. They could conceivably tell, for instance, if a car has suspension problems by checking the computer that controls the car's antilock brakes.

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Adaptibility is key to managers' future

Consultant cautions net managers to stay in tune with changes in overall company strategy.

By Barton Crockett
Senior Writer

Communications managers hoping for career advancement should heed this advice: Stay flexible and in tune with the company's overall competitive strategy.

According to Michael Gauthier, a principal in the Lexington, Mass.-based management consultancy Temple, Barker & Sloane, Inc., managers who do not consider the corporate agenda when proposing network projects seldom win fans in upper management.

The upshot, according to Gauthier, is that not every communications manager will prosper by coming up with new ways to use networks for competitive advantage.

"Some companies simply refuse to make huge capital investments to differentiate themselves from the competition," Gauthier said. "Communications managers who don't heed this and propose expensive networking projects in such environments are going to be perceived as out of touch with their company."

Gauthier bases this advice on his observations of communications managers who have prospered or faltered after working with him on consulting projects.

His firm sells a variety of technology- and nontechnology-related consulting services, and has revenue of about $50 million a year.

According to Gauthier, there are basically three strategies managers can use to win the confidence of superiors: concentrate on building networks for strategic advantage, concentrate on building effective networks and concentrate on running their department cost-efficiently.

(continued on page 28)

EXECUTIVE BRIEFS

BY BARTON CROCKETT

Selling pay hikes. What is the best way for managers to justify communications staff pay increases to corporate human resources departments? According to Deborah Thobe, a compensation specialist with the Dallas-based consulting firm William Mercer, Meidinger-Hansen, Inc., it isn't by arguing that the market for network specialists is tight.

The communications staff paycheck

Data communications manager	$55,000
Senior data communications technician	$33,100
Network control	
Technician	$25,300
Senior technician	$30,800
Supervisor	$35,800
Network installation and maintenance technicians	
Entry-level	$20,500
Intermediate	$25,300
Senior	$30,800

Figures are averages for 1987 and are based on a survey of 135 organizations that have their own communications department.

SOURCE: WILLIAM MERCER, MEIDINGER-HANSEN, INC., DALLAS
GRAPHIC BY SUSAN J. CHAMPENY

"Simply saying that the supply of these people lags demand, while true, doesn't always carry much weight with human resources managers," Thobe said. "A better approach is to argue that the value of this person to the company has increased."

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Executive Briefs

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Communications managers should argue that their company — and businesses in general — benefit more from networking now than they did in the past and show how the company is justified in increasing salaries to reflect the additional importance, Thobe said.

Salary surveys can help prove the point. Surveys done by William Mercer, Meidinger-Hansen show that average annual pay increases for communications staffers and managers range from 5% in 1987 to an anticipated 5.7% in 1989, outpacing pay increases for other workers by .4% to .5% each year.

While such increases can be attributed to a dearth of qualified personnel, Thobe said a more likely explanation is that they reflect an increase in how much companies value communications.

"While a number of factors affect salaries, I think it's reasonable to argue that one factor affecting them is value measures," she said. "The fact that companies are increasing salaries for communications people more than for other employees indicates a consensus that this function is increasing in relative importance."

Thobe said communications managers strengthen this argument by showing human resources personnel how much other firms in their industry are increasing pay for communications staffers.

"There is nothing like a pay scale from a competing firm to convince human resources people to go along [with a pay increase]," she said.

Rising above the plateau. More workers than ever are getting stuck in jobs with no chance of advancement; consequently, managers should critically reevaluate the way they reward solid, but not stellar, performers, according to Hank Karp, a senior associate with the Lexington, Mass.-based management consultancy ODT Associates.

Karp argued that three factors contribute to the fact that the number of professionals who have reached a career plateau is higher today than it has been in decades.

First, middle management is glutted with "baby boomers" in their late thirties and early forties, meaning that more people than ever are the appropriate age to compete for a limited number of upper and middle management positions. The competition for management jobs is increased, Karp said, by the fact that women and minorities are now competing for these positions as well.

Secondly, Karp argued that corporate mergers and acquisitions, along with innovations in communications and computer technology, are thinning out the number of upper and middle management jobs.

Finally, Karp said that professionals today are better educated than they were one or two generations ago, which makes competition for promotions more intense.

Faced with these demographics, Karp said, managers must change the way they manage. "Executives have got to stop telling people that the reward for solid performance will always be a promotion," he said. Karp said executives should instead emphasize increased responsibility as a reward for good work.

He also said managers should be sensitive to the symptoms of stress brought on by being trapped on a career plateau. "One thing some workers do when they plateau is become workaholics," he said. "They figure, 'If I just work more hours, my boss will give me a promotion.' Managers should look out for symptoms like this and encourage a potential workaholic to develop outside activities," he said.

Adding to worker frustration with career dead ends, Karp claimed, is widespread dissatisfaction with performance appraisals.

In an ODT survey of personnel administrators at 1,700 large and small businesses and nonprofit organizations, more than 70% of the respondents said employees complain that their bosses "don't know how to give appraisals." The same number also said employees find appraisal ratings are "interpreted differently by different bosses." More than 50% said that employees believe performance ratings "do not relate well to actual employee performance," and 45% said employees believe that their bosses "do not provide information on how to improve."

Karp said lack of faith in performance appraisals can be particularly disheartening for an employee on a career plateau.

"A manager should give a plateaued employee an honest appraisal, which is something that tends not to happen," she said. "The tendency is for a boss to either give this kind of employee unrealistic hopes for promotion, which can be disillusioning, or be too critical, which isn't really fair."

Counting on computers. A survey earlier this year of 510 senior financial officers in the National Association of Accountants (NAA) found that more than 98% said they use personal computers on a regular basis.

The survey was performed jointly by the Big Eight accounting firm Arthur Young & Co. and the NAA. Survey respondents worked for firms with revenue ranging from just under $50 million to more than $1 billion. Most held the title of chief financial officer.

Among the benefits of personal computers cited by financial officers were time savings, increased productivity, better accuracy, enhanced analytical capabilities and improved report presentation.

Noted one respondent, "Accountants should throw away their paper pads and invest their money in computers."

Adaptability is key to managers' future

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The appropriate approach depends on the company, Gauthier said.

In the first, communications managers try to use leading-edge communications technology to improve their firm's service, to lock out competition or to help it enter new markets. Cost is a secondary concern.

This approach is apt for companies committed to fostering an image as their industry's premier vendor and in which networking can help distinguish their product. It is unsuitable, however, for companies committed to being the low-cost supplier in their market.

Managers pursuing this scheme, Gauthier said, usually do so with the full support and backing of a technology visionary in upper management.

In the effective network approach, Gauthier said, a communications manager emphasizes not so much leading-edge technology but reliable service and helping end users work more efficiently. This approach best suits companies with a conservative, but not spartan, marketing plan. These companies are willing to spend more for superior products and services but only after cautious evaluation and cost-justification.

Here, net expenditures are justified in partnership with end users. Communications managers use cost-justification schemes that show, for instance, how each dollar spent on communications improves marketing efficiency by twice that amount.

In the final scheme, Gauthier said, communications managers tout their prowess as cost-cutters. Such an approach is appropriate for firms in tight markets, where communications can add little to differentiate or improve a product.

Here, communications managers' primary value is in how little they spend. Managers work to impress upper management by maintaining adequate service while spending no more than their company's competitors and less than their predecessor. In lean times, such managers are usually asked to absorb more than their share of budget cuts.

The key to success, according to Gauthier, is for a communications manager to match his or her approach to the competitive philosophy of the company.

"When you get down to it, this is the guts of linking communications to business strategy," Gauthier said. "Communications managers who fail to do this will never be seen as vital players in their company's overall business plans."

Accomplishing this, however, requires tough choices and critical self-evaluation, Gauthier said. "Some managers simply may not be able to work under the competitive strategy outlined by their company," he said. "A technological visionary, for instance, may not be able to handle working in a firm with a cost-cutting mind-set, while a cost-cutter may not be much of a technological visionary.

"To truly be successful," Gauthier said, "a communications manager must sit down and decide, 'Hey, am I really suited for the job?' "

To achieve this end, communications managers must be ready to change their strategies as business conditions change for their company, Gauthier said.

"As we all know," he said, "businesses run in cycles. A company that is traditionally tightfisted but is doing well may want its communications manager to change gears and think up some visionary applications. Likewise, a company that has traditionally pursued leading-edge technology may run into lean times and start looking for a budget-cutter."

According to Gauthier, success in a changing environment depends on conscientiously staying in tune with the strategy set by upper management and staying aware of one's own management approach.

"I think most of us tend to fall into ruts, and communications managers are no exception," he said. "All too often, communications managers will choose to work as cost-cutters or as technological visionaries and not really think about whether what they are doing fits in with their company's strategy.

"When they do this," he said, "they do both themselves and their company a disservice."

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Chrysler bets on VSAT net to win edge

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Simply by analyzing electrical components with a computer, Simonds said, an engineer can diagnose just about any problem afflicting an automobile "except a flat tire."

From the VSAT network, the personal computer extracts such information from Chrysler's mainframe as a car's service history and maintenance bulletins. The mechanics use this information to help them fix the car.

In return, the personal computer gives the mainframe a record of the repairs made. This provides Chrysler headquarters with up-to-date information about the kinds of problems afflicting its cars and engines, information that is often unavailable, Simonds said.

> The computer gives mechanics a wealth of information to tap when troubleshooting car problems.

▲▲▲

Once in the mainframe, this information can be used by engineers at other Chrysler dealerships. So, for instance, a mechanic working in Raleigh, N.C., will have a complete history of repairs performed on a car in Salem, Ore.

In addition, the computer gives mechanics a wealth of information and advice to tap when troubleshooting car problems. This could make Chrysler cars easier to maintain than those from other automakers, which could win Chrysler increased customer loyalty.

This latest advantage may be fleeting, however, since other car manufacturers are developing, or already have developed, computerized car repair systems.

But Chrysler hopes to leverage the network for other competitive applications as well.

Chrysler plans, for instance, to use the network to let salespeople order and confirm delivery dates for cars from a showroom computer. After desired car features are keyed in, the computer will query Chrysler mainframes to find out if and where a car meeting the description is in stock. It will also give a date when the car could be shipped to the dealer.

The showroom computer can display possible financing terms. If a sale is made, a contract with an order confirmation could be completed in a few moments. Currently, according to Simonds, salespeople must wait at least a day to find out when a car can be delivered and to get a confirmation on an order.

The application could improve Chrysler's marketing efforts and help win customers at the critical moment between deciding they want a car and actually signing a contract.

Another competitive application Chrysler hopes to support with the network is video broadcasts, Simonds said. Chrysler will use these broadcasts to deliver training sessions on subjects such as customer service and engine repair. Eventually, Chrysler Chairman and Chief Executive Officer Lee Iacocca may give motivational speeches over the network.

The current X.25 packet network services from Telenet Communications Corp. and Tymnet, McDonnell Douglas Network Systems Co. that Chrysler currently uses to support dealerships — the so-called Dealer Information Access Link network — enables dealers to electronically submit sales reports and car orders. Dealers pay a subscription fee of a few thousand dollars per year for the service.

But the X.25 network is slow, more expensive and less reliable than the satellite network, according to Dennis Barile, manager of telecommunications for Chrysler.

Simonds said dealers will pay Chrysler a small fee to have the VSAT equipment installed. While the satellite network will replace Chrysler's current X.25 network, Barile said some portions of the X.25 network will be retained to back up the satellite service. ☒

Association Watch

continued from page 27

associates as the Association of Data Communications Users, Inc. and the Computer and Communications Industry Association.

The **International Communications Association (ICA)** is sponsoring a seminar on international telecommunications policies and services from Nov. 14 to Nov. 16 in Dallas.

According to the ICA, the conference is for "any telecommunications professional who now has or will soon have responsibilities for consulting, managing, designing or implementing telecommunications services to foreign countries."

Topics to be covered include an introduction to telecommunications policy, with a history on the development of the International Telecommunications Union.

The session will also include an analysis of national approaches to regulation in Europe, Asia and Latin America, a discussion of major international standards issues and a comparative review of products and services provided by international carriers.

For more information, call the ICA professional development hotline at (800) 423-4636.

Advanced Manufacturing Research, Inc. (AMR) is sponsoring a conference on computer networking in factories on Nov. 21 and 22 in Cambridge, Mass.

The event will feature presentations by representatives from IBM, Digital Equipment Corp. and Allen-Bradley Co. on the future of their respective computer-integrated manufacturing (CIM) product offerings.

It will also feature user presentations on CIM efforts, as well as panel discussions of long-term trends affecting manufacturing in this country and in Europe after the development of the common market in 1992.

The conference costs $595. For more information, contact the AMR seminar coordinator at (617) 621-1700.

The **Center for Telecommunications Research** at Columbia University in New York is sponsoring a research review and seminar on high-speed packet switching on Nov. 18.

The seminar will feature speeches by researchers at GTE Laboratories, Inc., Bell Communications Research, Inc. and AT&T Bell Laboratories.

Topics to be covered during the seminar include "Buffer Strategies in Wideband Packet-Switching Systems," "High Speed Networking" and "Non-Blocking Multi-Rate Networks."

An $80 fee pays for attendance and lunch at the day-long event. For more information, contact the center at (212) 280-2483.

The country of **Bhutan** has become the 165th member of the **International Telecommunications Union.**

Bhutan is located in the eastern Himalayas, bordering the People's Republic of China and India.

The country spans about 29,000 square miles, with a population of just over one million. In 1987, it had 15 telephone exchanges serving 1,990 telephone lines.

The **Tennessee Telecommunications Users Association,** a users group with more than 200 members from 100 companies in Tennessee, recently announced its newest slate of officers.

Taking over as president is Michael Jackson, telecommunications manager at Sun Trust Service Corp. in Nashville. The new vice-president and program director is Brenda Weaver, director of telecommunications for Ingram Distribution Group, Inc. in Nashville.

The group's new treasurer is Cindy Fielder, support services specialist with the Nashville office of the Internal Revenue Service. Susan Fisher, director of telecommunications with Erlanger Medical Center in Chattanooga, is the group's new secretary.

The group's director of vendor relations and regulatory liaison is Paul McCullough, communications manager with American General Life & Accident Insurance Co. in Nashville. Membership director is Michael Old, director of computer services at Christian College in Memphis.

The new director of public relations is Mel Dunn, director of corporate telecommunications at Genesco, Inc. in Nashville.

Don Den Uyl, senior technical specialist with Bowater, Inc. in Calhoun, accedes to past president.

These new officers will hold their posts until Aug. 31, 1989.

The **San Diego State University Center for Communications** is sponsoring a seminar called "Advanced Communications Technologies and the Public Interest" on Nov. 15 and 16 in La Jolla, Calif.

Speakers will include Federal Communications Commissioner Patricia Diaz Dennis and Rep. Edward Markey (D-Mass.), chairman of the House Subcommittee on Telecommunications. Researchers from AT&T Bell Laboratories and the Massachusetts Institute of Technology will speak about the impact of new technologies on the television and movie industries.

They will also discuss the impact of these technologies on business users of telephone services and data communications.

The event will include a panel discussion on the impact of the 1988 presidential election on telecommunications policymaking. ☒

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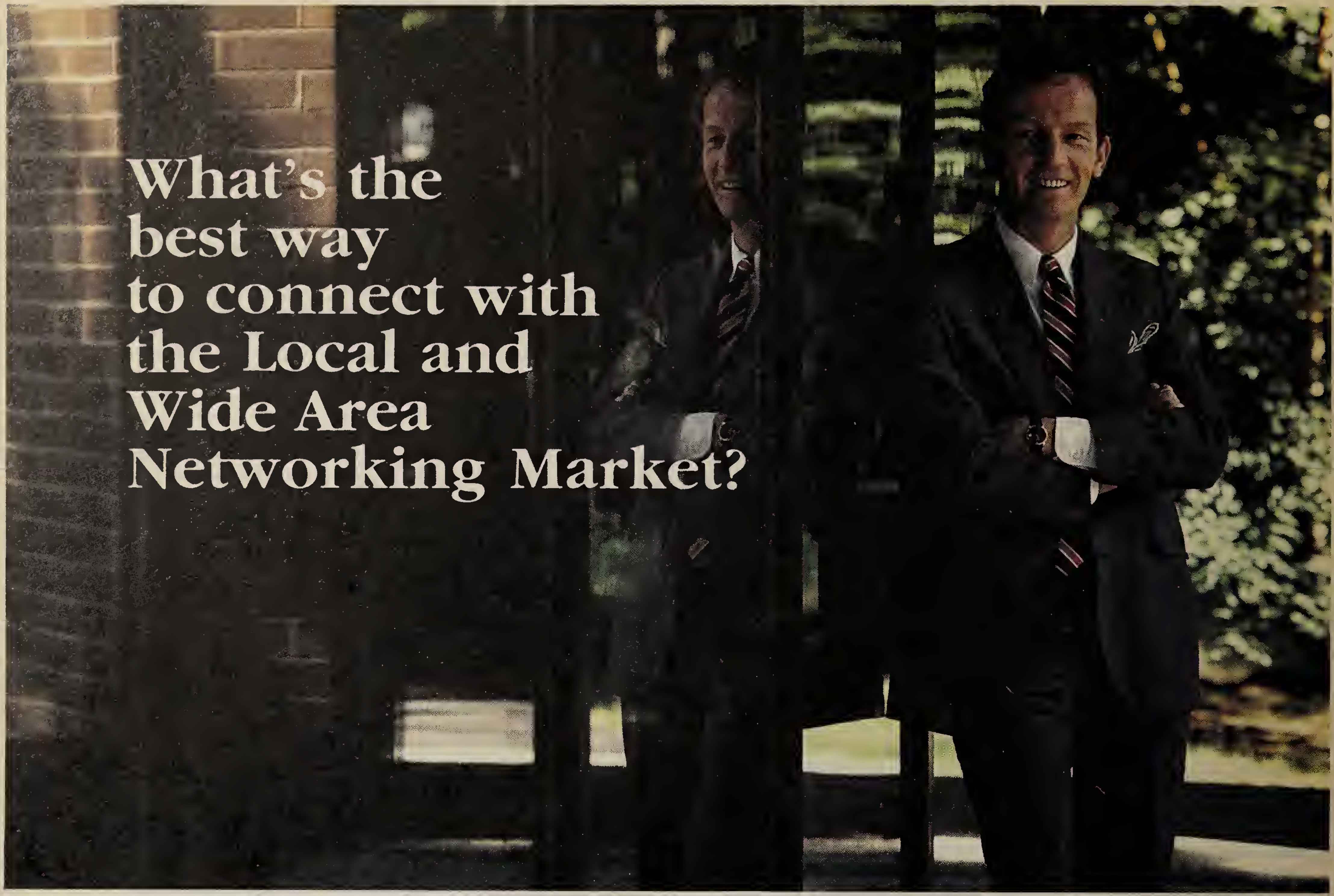
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Worth Noting

Next week: *Network World's* Management Update explores purchasing alternatives for managers in the market for voice and data communications equipment.

First Look

Codex releases three DSU/CSUs

Codex Corp. recently introduced three data service units/channel service units (DSU/CSU) that link user sites to AT&T's Dataphone Digital Service (DDS) and DDS-compatible services offered by Bell operating companies.

The **Codex 2150** and **2160** support a single DDS link. The units can be configured and controlled via Codex 4800 and 9300 network management systems. Those net management systems are compatible with IBM's host-based NetView network management system. In addition, the units can be configured via a front panel, which includes an LCD display.

The Codex 2150 supports DDS links operating at 2,400 bit/sec, 4.8K bit/sec and 9.6K bit/sec. The 2160 supports 56K bit/sec DDS circuits. The units also support analog tail circuits and transmit asynchronous data synchronously.

The 2160 also supports an optional six-channel time-division multiplexer that enables users to combine multiple local devices, operating at up to 19.2K bit/sec, onto a 56K bit/sec DDS link.

The 2150 and 2160 perform standard local and remote loop-back tests, as well as DSU/CSU selftests and bit-error testing of the DDS line and the DSU/CSU itself.

The **Codex 2020** DSU/CSU works with AT&T's Accunet Switched 56 services to provide a dial back-up facility for DDS lines. The unit contains an automatic call device

(continued on page 32)

US Robotics to unveil V.32 modem

By Jim Brown
New Products Editor

SKOKIE, Ill. — U.S. Robotics, Inc. is expected to introduce this week a 9.6K bit/sec modem supporting both its proprietary high-speed technology (HST) modulation technique and the CCITT V.32 standard. The company is also expected to introduce a modem supporting only V.32.

The Courier HST Dual Standard and the Courier V.32 modems come in stand-alone and rack-mounted versions supporting dial-up or two-wire leased lines.

The Courier HST Dual Standard enables data center users to support remote Courier HST modems, which operate at up to 9.6K bit/sec, as well as the growing number of V.32-compatible modems. The Courier V.32 will be able to communicate with other vendors' V.32-compatible modems.

The Courier HST Dual Standard automatically detects whether the remote modem is HST-compatible or V.32-compatible.

Courier HST modems support asynchronous data transmission in what is called asymmetrical full duplex, a technique that splits the telephone line into a main channel and a secondary channel.

The main channel supports the modem's maximum speed, such as 9.6K bit/sec, while the secondary channel operates at 450 bit/sec. A true full-duplex modem supports two full-speed channels.

The main channel supports data flow from one device to another, while the slower channel transmits control commands. For example, in a microcomputer-to-microcomputer file transfer, data is transmitted on the main channel while acknowledgment and error control commands are transmitted via the secondary channel.

Because this technique reduces the turnaround time that results when a receiving modem reverses the data flow direction to transmit those same commands to sending modems, it reduces actual file transfer time.

In its proprietary HST mode, the Courier HST Dual Standard transmits asynchronous data at 9.6K bit/sec with fallback rates of 7.2K bit/sec and 4.8K bit/sec.

Courier HST modems are largely used in applications requiring one-way data flow, such

(continued on page 32)

Alpha Micro software ties MS-DOS-based PCs to host

By Barton Crockett
Senior Writer

SANTA ANA, Calif. — Alpha Microsystems, Inc., which sells multiuser microcomputer systems based on its proprietary operating system, last week unveiled a software package that lets an Alpha Microsystems host work as a file server for up to 64 MS-DOS-based personal computers.

The software, Planet 3.0, lets DOS users access applications on an Alpha Microsystems host through terminal emulation. It also lets microcomputer users work on and store files in the Alpha Microsystems host and use the host as a print server.

The software costs anywhere from $850 for a single MS-DOS-attached computer to $3,250 for 64 MS-DOS-attached computers, which is the maximum number of DOS machines Planet will support.

Gary Nelson, director of marketing for Alpha Microsystems, described the product as part of an ongoing effort to support other makes of computers.

"Let's face it, we're not going to replace IBM," Nelson said. "Our strategic direction is to increase our strength in data communications so we can work with machines from other manufacturers."

The current release of Planet works for personal computers connected to an Alpha Microsystems host via RS-232 or RS-422 interfaces. Nelson said the company will announce later this year a new version of Planet that supports personal computers connected to the host via Ethernet.

Planet actually consists of two software modules: Orbit, which is loaded on DOS machines, and Planet Server, which is loaded on the Alpha Microsystems host.

Orbit coresides with DOS in the microcomputer's memory when booted. Orbit intercepts specified Basic I/O System and DOS system calls, allowing them to be serviced locally or transferred to the Alpha Microsystems host.

Planet Server handles requests sent to it by Orbit.

Alpha Microsystems is located at 3501 Sunflower, Santa Ana, Calif. 92704, or call (714) 957-8500. ◼

10NET offers 10M E-net, new bridges

Company lowers prices on older local network products and outlines future product strategy.

By Jim Brown
New Products Editor

DAYTON, Ohio — 10NET Communications recently expanded its line of local network products with the introduction of an Ethernet-compatible local net and a pair of bridges for linking 10NET networks.

10NET, a division of Digital Communications Associates, Inc., also revealed future product development plans and dropped the price of its existing line of network products.

The company's 10NET LAN for Ethernet consists of a 10M bit/sec Ethernet adapter board and 10NET Plus software for IBM Personal Computers. Microcomputers can share applications, hard disks and printers supported by personal computers on the network.

The IEEE 802.3-compatible Ethernet board supports both thick and thin coaxial cable, and the 10NET Plus software supports IBM's Network Basic I/O System as well as the Server Message Block (SMB) protocol jointly developed by Microsoft Corp. and Intel Corp. SMB enables MS-DOS-based Personal Computers to transparently link to other network-attached systems outfitted with SMB-compatible software, such as Unix-based minicomputers.

The Ethernet product line complements 10NET's existing local network products, such as the company's 1M bit/sec twisted-pair wire local network.

Shipping next month, 10NET LAN for Ethernet, including the board and software, sells for $695 per microcomputer.

10NET's new bridges are software products that work in conjunction with 10NET adapter boards in Personal Computers running DOS 3.1 or above and 10NET Plus software supporting NETBIOS.

The first package, 10NET LAN Bridge, can support links among 1M bit/sec twisted-pair 10NET networks, 1M bit/sec 10NET Fiber Optic networks, 10M bit/sec 10NET Fiber Optic networks and 10M bit/sec 10NET LAN for Ethernet networks. The software supports the physical link layer and speed conversion, enabling users of these nets to communicate. Users need to install the appropriate 10NET adapter boards in the Personal Computer running the bridge software.

The $595 10NET LAN Bridge software includes a monitor program that displays network traffic, bridge status information and error information on the monitor of the Personal Computer acting as the bridge.

The second bridge product, 10NET LAN for Token-Ring, enables 10NET Plus neworks to communicate with IBM Token-Ring networks running 10NET Plus or IBM's PC LAN Program. The software sells for $295.

In terms of future product directions, the company last week announced a joint marketing agreement with Syntax Systems, Inc. of Auburn, Wash. 10NET will market Syntax's SMB-compatible SMBserver software, which enables a Digital Equipment Corp. VAX or Unix-based minicomputer to serve as a file or print server for IBM Personal Computers running 10NET Plus software.

The 10NET Plus software supports the Server Message Block protocol.

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10NET also said it is developing bridge software capable of linking Apple Computer, Inc. AppleTalk-attached Macintoshes to IBM Personal Computers on its 10NET twisted-pair, fiber-optic or Ethernet networks.

The 10MAC bridge software runs on a Personal Computer outfitted with an AppleTalk connector and a 10NET local net adapter board. The software will perform physical layer and speed conversions to enable Macintoshes running a Macintosh version of 10NET Plus software to communicate with Personal Computers running 10NET Plus software.

The bridge software is expected to ship by early 1989. The company said it will develop adapter boards to directly link Macintosh IIs and Macintosh SEs to 10NET fiber-optic, twisted-pair and Ethernet networks.

The bridge product and the boards (which are expected to ship in mid-1989) will require the Macintoshes and Personal Computers to be outfitted with utility software capable of converting messages between the two native data formats.

(continued on page 32)

Timeplex bases new net mgmt. tools on Sun wares

Time/View controls multiple Timeplex products.

By Jim Brown
New Products Editor

WOODCLIFF LAKE, N.J. — Timeplex, Inc. recently introduced two net management systems, based on equipment and software from Sun Microsystems, Inc., that can be used to control and monitor a range of Timeplex network products.

The Time/View 2000 and Time/View 4000 products enable central-site network operators to access and control a network of remote Timeplex Link T-1 multiplexers, Timepac packet-switching gear and Microplexer statistical multiplexers.

The Time/View products let central-site network operators access remote Timeplex equipment and isolate faults, determine the cause of problems, troubleshoot equipment components, reconfigure equipment and examine line status, according to the company.

A Time/View 2000 Sun workstation linked to the diagnostic port of a central-site Timeplex T-1 multiplexer, packet switch or statistical multiplexer can be used to control an entire network of similar equipment. The workstation runs Unix-based software written in C language that supports menu-driven commands and a user interface that appears the same regardless of which piece of Timeplex equipment is being monitored.

The software enables users to view multiple active windows displaying the status of an entire network, as well as individual nodes.

Time/View 4000 consists of a Unix-based minicomputer capable of supporting multiple Sun workstations and a mix of Timeplex equipment. Users link the diagnostic ports of Timeplex T-1 multiplexers, packet switches and statistical multiplexers to the Unix minicomputer, which in turn supports multiple Sun workstations on an Ethernet local net.

The Unix-based minicomputer collects data from the different Timeplex equipment, which can then be accessed via applications running on the Sun workstations.

Time/View 4000 enables multiple network operators to work on solving a single major network problem. It also enables multiple operators to manage multiple nets that include different types of Timeplex equipment.

The company's initial Time/View network management product, announced in June 1987, ran on Hewlett-Packard Co. 9000 series minicomputers and was accessed via attached terminals or IBM Personal Computers running Time/View software. Users of that Hewlett-Packard-based system requested an improved graphical user interface as well as the ability to use a mouse, icons and menu-driven commands, the company said.

Time/View 2000, including a Sun workstation and software, costs $20,000. The Time/View 4000 system, including the software for the Unix-based minicomputer, Sun workstations and workstation software, can cost as much as $160,000, depending on configuration. Both products are scheduled to be available next spring.

Timeplex can be contacted at 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675, or call (201) 391-1111. ◘

U.S. Robotics to unveil modem

continued from page 31

as file transfers between IBM Personal Computers.

They also support links from remote terminals to hosts by sending screen data from the host to the terminal on the main channel and key strokes from the terminal to the host on the secondary channel.

In V.32 mode, the Courier HST Dual Standard supports asynchronous or synchronous data at 9.6K bit/sec, with fallback rates of 7.2K bit/sec or 4.8K bit/sec. The V.32 mode is best suited for applications requiring true full-duplex transmission, such as synchronous host-to-host or microcomputer-to-mainframe transmission and remote local-area network bridges.

The Courier HST Dual Standard also works with slower speed HST modems, as well as with CCITT V.22bis-compatible modems at 2,400 bit/sec, CCITT V.22- and Bell 212A-compatible modems at 1,200 bit/sec, and CCITT V.21- and Bell 103-compatible modems at 300 bit/sec.

> U.S. Robotics will offer a trade-in policy to purchase a Courier HST Dual Standard for $799.
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Both modems support Microcom, Inc.'s Microcom Network Protocol Classes 1 to 5, which include error correction and data compression, and Hayes Microcomputer Products, Inc.'s AT command set.

The Courier HST Dual Standard is expected to sell for $1,595, while the Courier V.32 price will be $1,495.

U.S. Robotics also said it will offer a trade-in policy that will enable users to purchase a Courier HST Dual Standard for $799 with trade-in until March 1989. Owners of existing Courier HST modems, as well as non-V.32 modems made by Data Race, Inc., Hayes, Fastcomm Communications Corp., Microcom, Racal-Vadic, Inc., Telebit Corp. and Ven-Tel, Inc., can send those modems plus $799 to U.S. Robotics and get a new Courier HST Dual Standard in return.

Users can reach U.S. Robotics by writing to 8100 N. McCormick Blvd., Skokie, Ill. 60076, or by calling (800) 342-5877 or (312) 982-5010. ◘

10NET offers 10M E-net

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The company is also working with Isolation Systems, Inc. of Toronto to develop a Secure LAN software product that will support data encryption. The product will be marketed to the federal government and banks.

Initially, the software will run on a Personal Computer acting as a network server and encrypt data before it is stored to disk. The second version of the software will work with 10NET adapter boards to encrypt data before it is transmitted on the network.

10NET also took the opportunity to announce that it will demonstrate an early version of its Microsoft LAN Manager-based Select LAN Manager product at the Comdex show in Las Vegas next month.

The product, which is still under development, is being designed to enable MS-DOS-based Personal Computers to communicate with an OS/2-based Personal System/2 acting as a network server. It is expected to be available in the second quarter of 1989.

Lastly, 10NET dropped the price for its existing product line.

The 1M bit/sec 10NET LAN for twisted pair dropped from $695 per node to $495. The 1M bit/sec 10NET Fiber Optic local net was reduced from $895 per node to $795.

10NET LAN for Personal System/2, which includes software and an IBM Micro Channel-compatible board enabling IBM Personal System/2s to communicate via twisted-pair wire at 1M bit/sec, was reduced from $695 per node to $495.

10NET Plus software for microcomputers on IBM Token-Ring Networks via an IBM Token-Ring adapter dropped from $395 per node to $195.

10NET can be reached by writing to 7016 Corporate Way, Dayton, Ohio 45459, or by calling (513) 433-2238. ◘

First Look

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that lets a user automatically switch from a failed DDS line to an Accunet Switched 56 line.

The prices of the three products range from $950 to $2,495, depending on configuration.

Codex Corp., Maresfield Farm, 7 Blue Hill River Road, Canton, Mass. 02021, or call (617) 364-2000.

■ Universal Data unveils ISDN terminal adapter

Universal Data Systems, Inc. recently introduced an Integrated Services Digital Network terminal adapter.

The **TA100** is customer premises equipment that supports the Basic Rate Interface, letting users simultaneously transmit voice and data over a single ISDN line. It is designed to work with ISDN services supported via Northern Telecom, Inc.'s DMS-100 central office switches.

The desktop unit provides two 64K bit/sec B channels and one 16K bit/sec D channel. Users can link IBM Personal Computers, terminals and other data terminal equipment to the adapter via RS-232 at asynchronous data rates of up to 19.2K bit/sec and synchronous data rates of up to 64K bit/sec. The terminal adapter will transmit Hayes Microcomputer Products, Inc. AT command set commands used to dial remote locations via the D channel.

Users can also attach standard telephones, using a single twisted-pair wire, to an RJ-11 jack on the TA100. Up to five telephones can be attached to that single twisted-pair wire, in much the same fashion as extension phones in a home share a single line to the central office. However, the TA100 will support only one voice call at a time. The TA100 has another RJ-11 jack that supports connection to the ISDN telephone line.

The TA100 supports the Link Access Procedure D error checking standard on the D channel and the T-Link data rate adaption protocol on data channels. The TA100 is slated to be available in January at a price of $1,500.

Universal Data Systems, Inc., 5000 Bradford Drive, Huntsville, Ala. 35805, or call (205) 721-8000. ◘

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"Yesterday, somebody asked me what I think about LattisNet. Here's what I told him in a nutshell."

W.C. Wise, Ph.D.
Assistant to the Vice President for Academic Information Management, Medical University of South Carolina

If you're running Ethernet without LattisNet, you're doing it the hard way.

LattisNet means not having to rewire your premises with coaxial cable. SynOptics created the idea and perfected the technology two years ago. SynOptics was the first to put Ethernet on telephone wire, the IBM Cabling System and fiber optic cable. And now, first to put the UTP transceiver on a chip for network adapter cards. Today over half of the Fortune 500 have LattisNet. Here's why.

LattisNet is the networking *utility* that enables you to run Ethernet in a star topology over your existing building wiring. No matter who your computer vendors are. Or how many buildings you have.

Full-speed, no-compromise, IEEE 802.3-standard Ethernet.

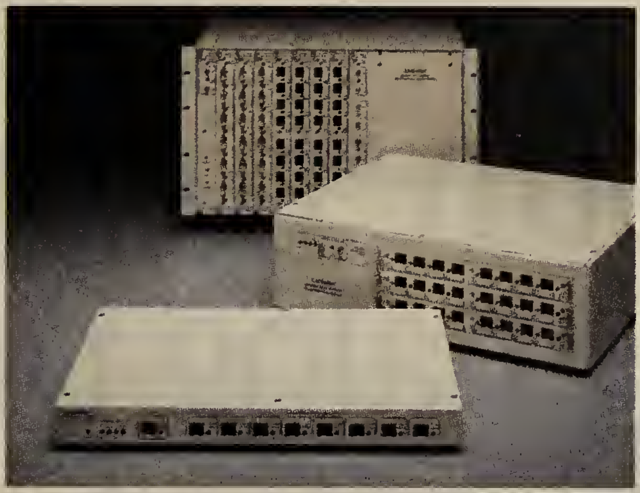
At 10 Mb/s.

Are You Running Ethernet, or Is It Running You?

Just imagine what you could save in time and money by installing Ethernet without having to run coaxial cable throughout your building.

Then consider this. LattisNet is also more reliable and easier to maintain than traditional Ethernet.

It's hard to believe that you could manage a network without an integrated fault isolation and diagnostic capability. With LattisNet, it's standard equipment. With traditional Ethernet, it's not even an option.



A concentrator for every size of workgroup, department and premises application gives you a full range of flexibility.

And, unlike traditional Ethernet, LattisNet is extremely simple to configure, reconfigure and expand.

It was designed that way, based on modular concentrators that reside in your wiring closets using the most common cabling connectors.

It means that moves and changes can be completed in minutes while the network stays up. That keeps end users happy.

Then, when there's a need to expand the size of a network, you upgrade the system simply by adding a module or concentrator.

That makes everybody happy.

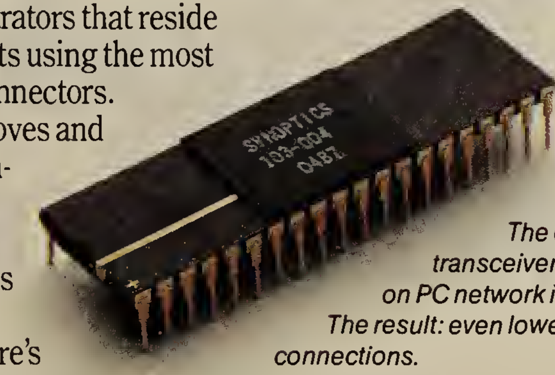
All In The Family.

SynOptics Communications makes concentrators in three sizes to economically accommodate network growth, from very small to very large.

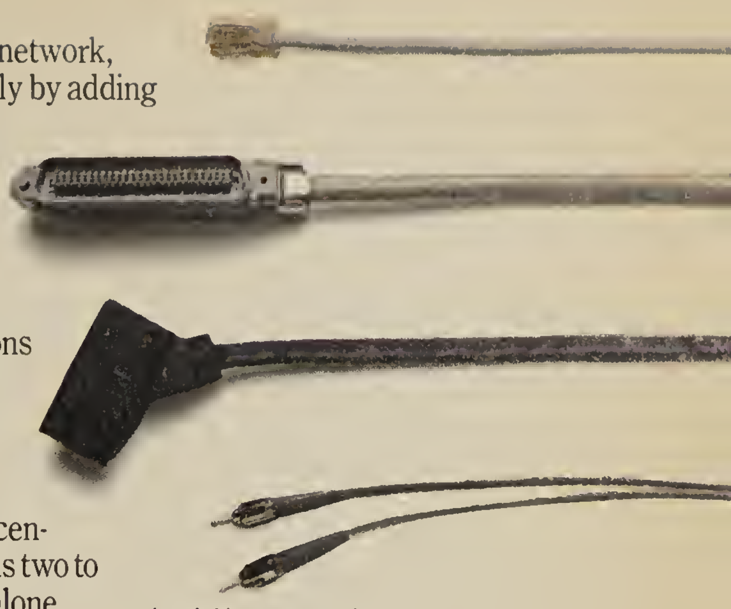
The new Workgroup Concentrator accommodates as few as two to eight users—either in stand-alone workgroups or as subnetworks within big networks.

For even larger applications, each Department Concentrator handles up to 24 users. And each Premises Concentrator handles up to 64 users, with no end to the number or mix of concentrators. And LattisNet has all major worldwide safety approvals.

The idea is big and simple at the same time. That's why more than 250 of the Fortune 500 companies are running LattisNet now. There are more than 75,000 Ethernet nodes in over 500 LattisNet local area networks across the United States and Europe. It works. And there's no better way.



The on-board transceiver chip is integrated on PC network interface cards. The result: even lower cost connections.



LattisNet runs on the cable that's already installed in your building.

Kinetics, Micom-Interlan, Novell and Western Digital Can't All Be Wrong.

That's right. The leading board manufacturers have put LattisNet transceiver chips on their cards for Macintosh, IBM, COMPAQ and other compatible PCs, workstations and file servers. And of course, it's not only simpler and more convenient than an external transceiver—it's substantially less expensive.

Simply put, there's no better way to run Ethernet.

Call (800) USA-8023 for the LattisNet connectivity guide or to talk to a technical representative.

SynOptics
Communications, Inc.

329 North Bernardo Avenue
Mountain View, California 94043
(800) USA-8023

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"SIMPLY PUT, THERE'S NO BETTER WAY TO RUN ETHERNET."

"If you're running critical analog private-line applications, you'd be crazy not to have an APL modem that's second to none."

—Patricia Thomas, AT&T National Account Manager

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"AT&T's analog private-line modems have a mean time to failure rate of up to 12 years. Second to none.

They have self-diagnostic systems, so they can report problems as they occur, and the problems can be resolved.

If there's trouble on the line, our modems can report it automatically to an AT&T Data Maintenance and Operation Control Center (DataMOCC), so that disrupted service can be restored before it affects your business.

You can get automatic dial backup capability, so if there are problems on your private line, you're automatically connected to the switched network. This means you can eliminate the need for a second, backup private line.

These are AT&T analog private-line modems, designed specifically to work with the AT&T Network and as reliable as the network itself.

For virtually flawless, reliable data transmission, there's no better combination.

If your data transmission is critical to the profitability of your company, you can't afford anything else."

For more information about AT&T analog private-line modems, see your AT&T Account Executive, your authorized AT&T reseller or call **1 800 247-1212, ext. 718.** In Canada, call 1 800 387-6100.

AT&T
The right choice.

OPINIONS

NIU FORUM

BY SHERRY GEDDES AND MAXWELL STEINHARDT

You can make a difference in ISDN

The announced benefits and futuristic capabilities of Integrated Services Digital Network technology wither a bit under close scrutiny. Unfortunately, nobody knows what it will deliver that can justify its high cost.

In a recent CTPS, Inc.-sponsored focus group, a telecommunications manager summed up the ISDN dilemma. "All of the vendors are waiting for us to tell them what to do with ISDN," the manager said. "They want us to define the applications for them. Meanwhile, we're waiting for someone to come up with a truly useful ISDN application — one that will justify the investment vendors want us to make for ISDN services."

Users have a tough time selling senior management on unrealized potential, especially when the per-line cost is a heavy multiplier for the budget bottom line.

ISDN's central office-to-central office link is still missing, and the short-term advantages of ISDN seem to be oriented more toward digital Centrex than customer premises equipment. Recognizing this problem, vendors are attempting to identify applications that the user community wants and that ISDN is uniquely positioned to provide. Thus the mad scramble is under way to find useful ISDN applications that don't require doubling the telecommunications budget.

> The NIU Forum will address issues of ISDN applications and interoperability.
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The skepticism of users and the confusion of vendors are totally understandable. But eventually, the fully connectable, totally standardized, application-rich, debugged and manageable ISDN of tomorrow will materialize.

Until then, smart managers should follow two concurrent courses of action. The first course is to get involved in the applications definition process. A new group, the North American ISDN Users' (NIU) Forum, has been created specifically to address issues of ISDN applications and interoperability. Sponsored by the National Institute of Standards and Technology in conjunction with the Association of Data Communications Users, several regional Bell holding companies and Bell Communications Research, Inc., the NIU Forum is a major step in the right direction.

Its goals include production of ISDN application profiles, creation of implementation agreements, development of conformance-testing methodology, sponsorship of multivendor interoperability demonstrations and formation of ISDN Net, a network for manufacturers that will enable vendors to test their ISDN products during the development cycle.

The NIU Forum began with two workshops — one for interested users, which took place in June, and one for vendors, in July, using information collected from the users. All professionals in the industry should become involved in this fledgling effort. The NIU Forum is a vehicle for users to ensure that ISDN meets their needs.

The second course of action for managers is to meet today's problems with today's technology. This pragmatic perspective may seem shortsighted, but that shortsightedness is a necessity when reading the telecommunications budget. For now, unfortunately, vendors' so-called ISDN "solutions" bring to mind the old tale about the emperor's new clothes.

A coordinated transition, based upon real needs — as mapped through organizational structures like the NIU Forum — will move us into the ISDN age.

Geddes and Steinhardt are managing partners of CTPS, Inc., a voice and data communications consulting firm in Mountain View, Calif.

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EDITORIAL

Congress lights a fire under the FCC

Congress deserves credit for imposing some much needed constraints on the Federal Communications Commission.

Two weeks ago, Congress attached an amendment to an FCC funding measure that would limit the amount of time the agency should have to investigate tariffs (see "Congress moves to speed FCC tariff investigations," page 13). The amendment requires the FCC to complete an investigation no more than one year after a tariff takes effect. Under certain circumstances, an investigation may be extended by three months.

The amendment also sets guidelines in other areas, such as when an FCC decision may be appealed.

Sources say Congress was responding to pressure from user associations and other industry lobbyists frustrated with the speed of FCC investigations, which can only be described as glacial in nature.

The funding measure and amendment are currently awaiting President Reagan's signature.

The amendment addresses a growing concern. Currently, there is no time limit on FCC investigations. As a result, the FCC has a large number of unfinished investigations, some of which involve important issues affecting users of networking services. Sen. Daniel Inouye (D-Hawaii), in introducing the legislation, said there are more than 20 pending tariff investigations. A dozen of these investigations have been under way for more than a year. Inouye said two investigations have been going on since 1981.

One would hope that an agency with as much influence as the FCC, which oversees one of the nation's most vital industries, would police its own affairs better, imposing internal constraints on investigations.

Unfortunately, that has not been the case.

> One would hope that an agency with as much influence as the FCC would police its own affairs better, imposing internal constraints on investigations.
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Consider the issue of strategic pricing of special access tariffs. The FCC began investigating the legality of strategic pricing of special access in 1985. Opponents of the practice, including the International Communications Association (ICA), claim such pricing has cost users hundreds of millions of dollars.

The strategic pricing investigation dragged on until December 1987, when the ICA petitioned the U.S. Court of Appeals to force the FCC to complete the study. Finally, after three years, the FCC ruled on the issue earlier this month.

Other important investigations currently under way include issues such as the legality of AT&T's customer-specific network offerings under Tariffs 12 and 15.

Failure to complete tariff investigations in a timely manner not only costs users money, it makes strategic planning difficult and complicates other important issues. For example, one of the major concerns slowing progress of the FCC's proposed price cap plan is how to deal with the many tariffs currently under investigation.

Critics of the congressional amendment argue that the FCC is understaffed and does not have the resources to complete investigations as quickly as users or vendors would like. They argue that, if the amendment is approved, the agency may allow tariffs to take effect without investigation unless it is certain it has the resources to complete the investigation within the prescribed time limit.

That argument doesn't hold water. Users and vendors are entitled to timely action by the FCC on issues of great importance to the industry. If staffing and funding are problems, they should be resolved, not used as excuses.

If the FCC can't set its own time limits and complete tariff investigations in a reasonable amount of time, it's entirely appropriate for Congress to impose some constraints.

OPINIONS

INTERNAL COMMUNICATIONS TARIFFS

BY MARY JOHNSTON

The ABCs of squaring up the corporate accounts

Like death and taxes, bills are an inevitable part of personal and professional life. For the average manager in American industry, authorizing the purchase of anything from magazines to copiers, from facsimile machines to employee travel, is second nature. Often, these approvals for transfer of company funds to outside vendors are routine and engender little discussion.

But communications expenditures such as internal funds transfer for purchasing a service from a private corporate communications network are another matter. Although they often require less of the total departmental budget than items such as travel or capital equipment, these expenditures are often the centerpiece of prolonged intracompany squabbling.

Managers often believe they can get a cheaper deal, better service or both on their own rather than by subscribing to corporate services. Departments that historically run their own networks or procure their own leased lines fear they will pay more than their fair share if they buy services from a corporate utility.

Nonetheless, despite strident opposition from users who value direct control, internal corporate communications tariffs are being implemented throughout the country. Often these arrive as the final component of a migration from many separate networks to one or more private corporate utility networks.

Companies that rely on fully leased services are somewhat isolated from users' discontent if the cost to the user is a simple pass-through of the common carrier tariff. However, for those building or enhancing large private networks, the process by which these tariffs are designed, deployed, administered and ultimately reevaluated can make or break the communications department's relationships with managers throughout the company.

Particularly for firms that have never had a corporate utility network or have never explicitly charged for internal communications services, corporate communications tariffs can be perceived as large and undeserved budget line items.

Typically, tariff rates are calculated by dividing the cost of the service by some measure of usage. However, the exact application of that formula to a specific company's situation can produce very different results each time, depending on a number of planning assumptions. Setting rates to recover for future usage is always difficult at best.

To minimize hostility toward a new internal tariff, communications managers should follow several important steps during the cost recovery design process:

> Department managers are essentially customers who must be convinced that the service is worth the price.

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- Identify desired and undesired subsidies among services or departments and make these explicit components of the planning methodology. When in doubt, select an equitable solution, as large numbers of subsidies result only in extended bickering between communications managers and their customers.
- Identify a limited set of user classes and service types, enough to provide some level of differentiation but not so many as to confuse users. Tariffs do not have to look exactly like Tariffs 1, 9, 10, 11 and 12 all rolled together.
- Consider the types of usage that are to be encouraged and make those explicit assumptions as well. For example, create an incentive for bulk file transfer at off-peak hours by instituting a lower off-peak charge.
- Identify all related costs, not just circuit costs, when calculating rates.
- Develop accurate estimates of usage. Take the time to get reasonable data rather than create it. This eliminates the need to greatly increase rates later.
- Make sure it is possible to collect the data required to calculate the user's bill. This may mean installing new software on local-area networks, gateways and private branch exchanges throughout the company.
- Compare tentative rate structures with competitive common carrier offerings. If the corporate service is more expensive, investigate the reasons. Maybe the organization should not use a private network to support selected requirements.
- Department managers are essentially customers. They must be convinced that the service is worth the price. Don't rely on corporate directives that require use of the service. Make them want to buy internally because the corporate network is cheaper and provides higher quality customer service.
- Set initial rates a little high. It is always possible to reduce them later, but it's more difficult to raise them.
- Send out trial bills to departments prior to actual implementation of the tariff. Be ready to revise billing algorithms if necessary.
- Provide an audit trail and a user appeal process to rectify billing errors.
- Design tracking systems to let other network planning activities take advantage of billing data and usage information.
- Be willing to listen to legitimate feedback.

Effective design and implementation of cost recovery systems are good for communications managers in that they provide ongoing data on usage patterns and trends. Tariff rates are also a good measure of the efficiency of the network. If internal tariffs are more expensive than a competing public service, take a closer look.

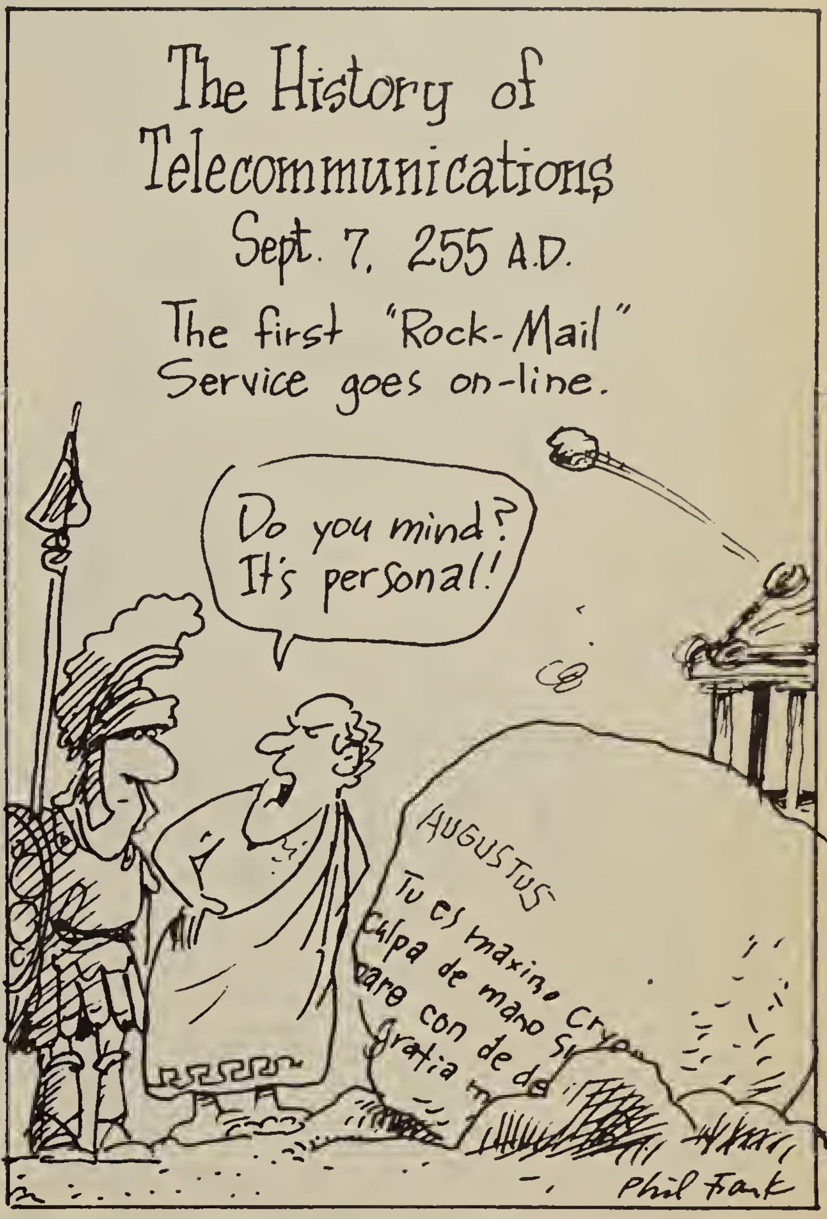
Finally, tariffs may provide incentives to user departments to employ network resources wisely and efficiently, thereby keeping costs down for the entire corporation.

Poorly designed and deployed tariffs result in cantankerous users who may employ subterfuge to buy from outside vendors, raising the charges that must be levied on remaining users and making the communications manager miserable in the process. Managers should invest resources now in up-front tariff development efforts, rather than later in repairing relationships with users. ☒

Johnston is a senior consultant with BBN Communications Corp. in Cambridge, Mass.

TELETOONS

BY FRANK AND TROISE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Phil Frank

LETTERS

PTAT-1 by mid-1989

In your editorial titled "Undersea fiber lays an international foundation" (*NW*, Oct. 3), you state that my firm, PTAT System, Inc., hopes to cut over PTAT-1 by mid-1992. This statement is in error, as PTAT-1 is scheduled for operational service by mid-1989.

The main laying of PTAT-1 across the Atlantic Ocean has begun. The shore-ends in the U.S., the UK, Bermuda and Ireland have already been completed and the terminal facilities constructed.

Our U.S. gateway facilities in New York and Philadelphia have been leased and construction begun.

All elements of the PTAT-1 program are on schedule for a July 1989 cutover to operational services.

Since PTAT-1 will have a significant impact on the international telecommunications environment, I think you will agree that your readers are best served by having accurate information.

Ronald Grawert
President
PTAT System, Inc.
McLean, Va.

Network World *welcomes letters from readers. Letters should be typed, double-spaced and sent to Editor,* Network World, *375 Cochituate Road, Box 9171, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

ALL WE ASK is that you share "a few choice words and measured phrases" with your fellow readers. If you have some insight into the world of networking, write a guest column for *Network World's* Opinions pages.

Columns should be timely, opinionated, literate, thoughtful and accurate.

Manuscripts should be letter-quality, double-spaced and between 600 and 900 words in length. Disk or modem submissions are preferred.

If you'd like to write a column, contact Steve Moore, features editor, *Network World*, Box 9171, Framingham, Mass. 01701, or call (508) 820-2543, ext. 732.

CLIMB EVERY MOUNTAIN

With the formation of the Information Technology Requirements Council, the MAP/TOP Users Group faces another challenge in its drive for manufacturing standards.

CONTINUED FROM PAGE 1

nounced that, effective Jan. 1, 1989, its original major backers — General Motors Corp., Eastman Kodak Co., Boeing Computer Services Co., the Industrial Technology Institute (ITI) and others — would no longer be footing the group's bills and handling its administrative functions. The MAP/TOP Users Group would have to stand on its own, developing new sources of funding and administration to continue the work it began.

The main reason given for this withdrawal by the companies was their desire to take advantage of the standards for their own use. During a press conference at the show, Gerald Elson, executive director of advanced manufacturing engineering for GM, stated the corporate case most succinctly by saying, "We need to take our [MAP] experts and get them to work on MAP installations."

The MAP/TOP Users Group hierarchy presented the news as an opportunity to move the group and the standards further ahead. Many group officials had privately stated concerns that the group was becoming too dependent on a small number of financial backers.

Charles Gardner, chairman of the U.S. MAP/TOP Users Group Steering Committee and a corporate coordinator for Kodak, said that the move would help the group broaden its user base and obtain more funding.

Don Falkenburg, acting president of ITI, said, "It's time to start our own separate organization. The group needs to be self-sufficient."

Few in the manufacturing sector questioned the need for the group to stand on its own. But major questions remain, such as:

- What will the new organization be like, and how will it be funded?
- How will membership be determined?
- Will it be strong enough to stand on its own and effectively promote MAP/TOP use?
- Who will have responsibility for the MAP and TOP standards?
- What effect will this have on the future development of these standards?

The ITRC's mandate

The Information Technology Requirements Council (ITRC) was established as a nonprofit corporation on May 24. The initial board of directors of the ITRC includes such MAP/TOP Steering Committee members as GM; Boeing Computer Services; Kodak; Apple Computer, Inc.; Bechtel Group, Inc.; the Canadian Standards Association; ITI; and Hewlett-Packard Co.

In a press announcement, the ITRC said its mandate is to "promote consensus, integration and

(continued on page 51)

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Network World ranks first in advertising page growth.

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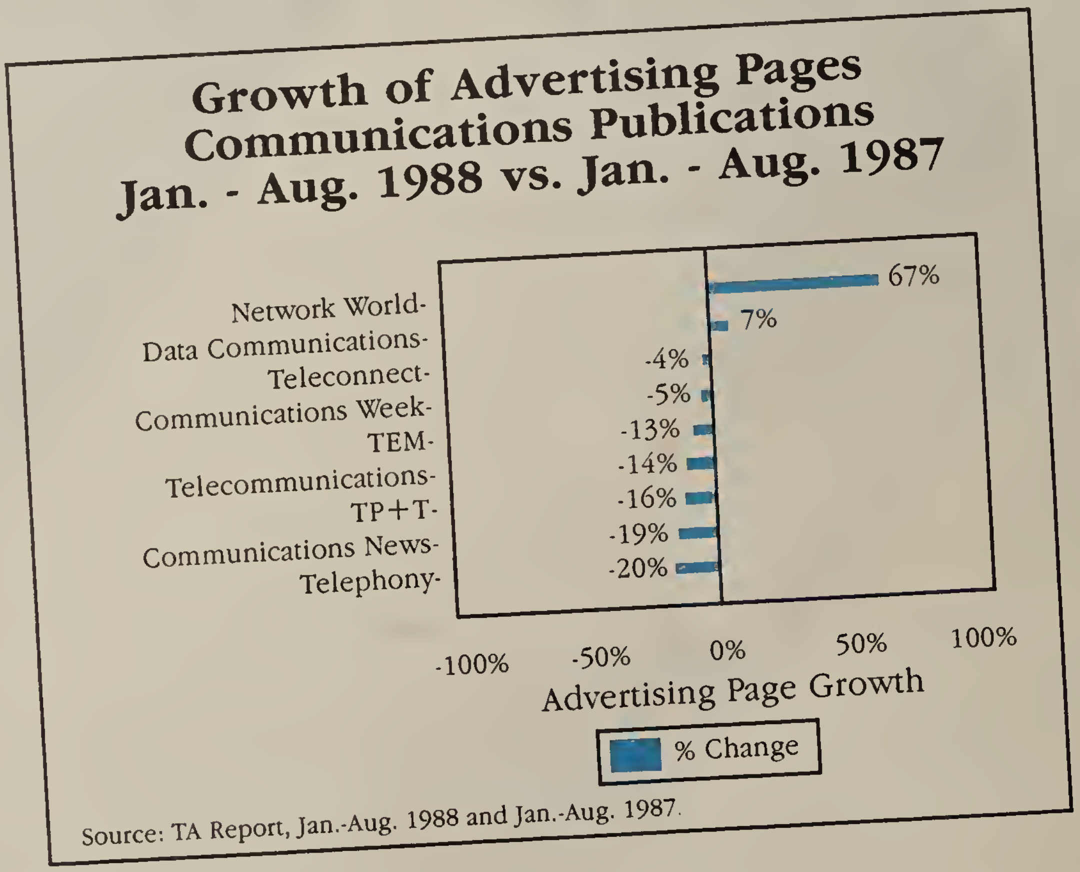

Source: TA Report, Jan.-Aug. 1988 and Jan.-Aug. 1987.

As you can see when comparing advertising pages for the months of Jan.-August 1987 and Jan.-August 1988, *Network World's* ad pages grew over 67%, while other industry publications experienced limited growth or actual decreases in advertising pages.

We thank you for your continued support and look forward to helping you ensure your success in today's network-oriented business environment.

Sincerely,

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INDUSTRY FOCUS

MANUFACTURING

EDI: winged messenger of business

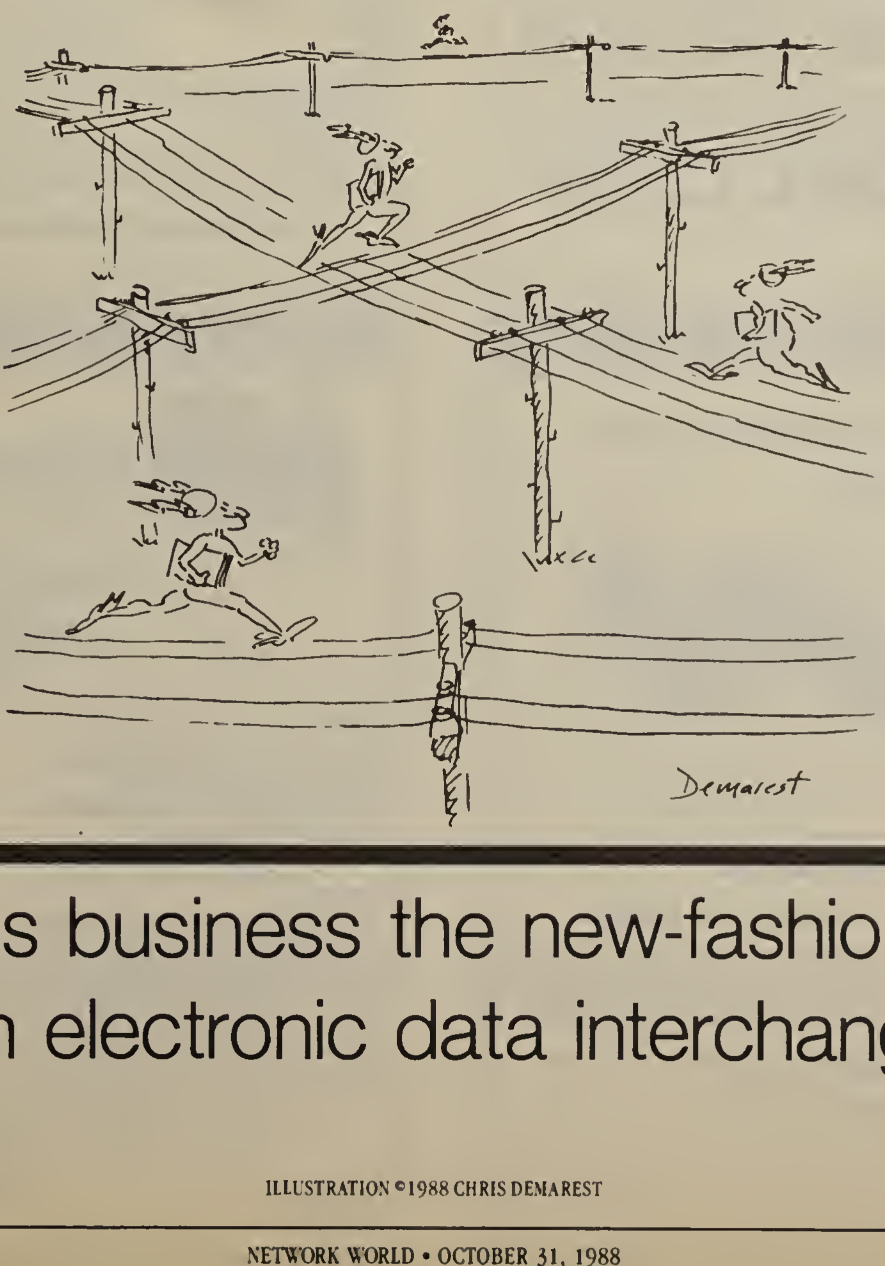
By LEE FOOTE

Electronic data interchange (EDI) is rapidly replacing paper as the means of communicating intercorporate business transaction information. E.I. Du Pont de Nemours & Co., Inc. has been among the corporate leaders in embracing and using EDI to meet its customers' needs and to achieve productivity gains.

Du Pont is one of the largest industrial companies in the world, with 1987 sales of $30 billion. It manufactures about 1,200 products at 200 major plants in 50 countries and markets those products worldwide.

Du Pont has been aware of the costs and delays associated with the traditional paper-based ways of communicating transaction information, such as purchase orders and invoices, since the mid-1960s. At that time, the company's transportation department was responsible not only for corporate logistics but also for payment of freight bills. Although Du Pont was considerably smaller then, this was still a huge, paper-intensive responsibility, difficult to fulfill within the Interstate Commerce Commission's timely payment regulations.

Looking into its procedures, Du Pont's transportation department staff concluded that it was incurring significant costs and time delays by reentering data into its computer system from documents prepared by carriers' computers. Staff members, seeking alternatives, asked why the information couldn't go directly from computer to computer, via telephone lines, and thus avoid printing, mailing and data reentry costs and delays.



This discussion piqued the interest of transportation managers from other companies, who wanted to examine the feasibility of using electronically communicated transportation documents. This led to the 1968 formation of the Transportation Data Coordinating Committee (TDCC), which was given the task of developing the data format standards and computer software necessary to exchange freight documents on an EDI basis.

Over the next decade, representatives from air, motor, ocean and rail carriers and various industries met frequently to develop standards for each of these modes of transportation. In addition, a few of the participating companies provided programmers and funds to develop standard EDI software for transmission and reception. All these efforts were finished by the late 1970s.

In the early 1980s, Du Pont and Chemical Leaman Corp., Du

(continued on page 49)

Foote is the section manager in the information systems department of E.I. Du Pont de Nemours & Co., Inc. in Wilmington, Del. He is responsible for Du Pont's electronic data interchange functions.

Du Pont does business the new-fashioned way — with electronic data interchange.

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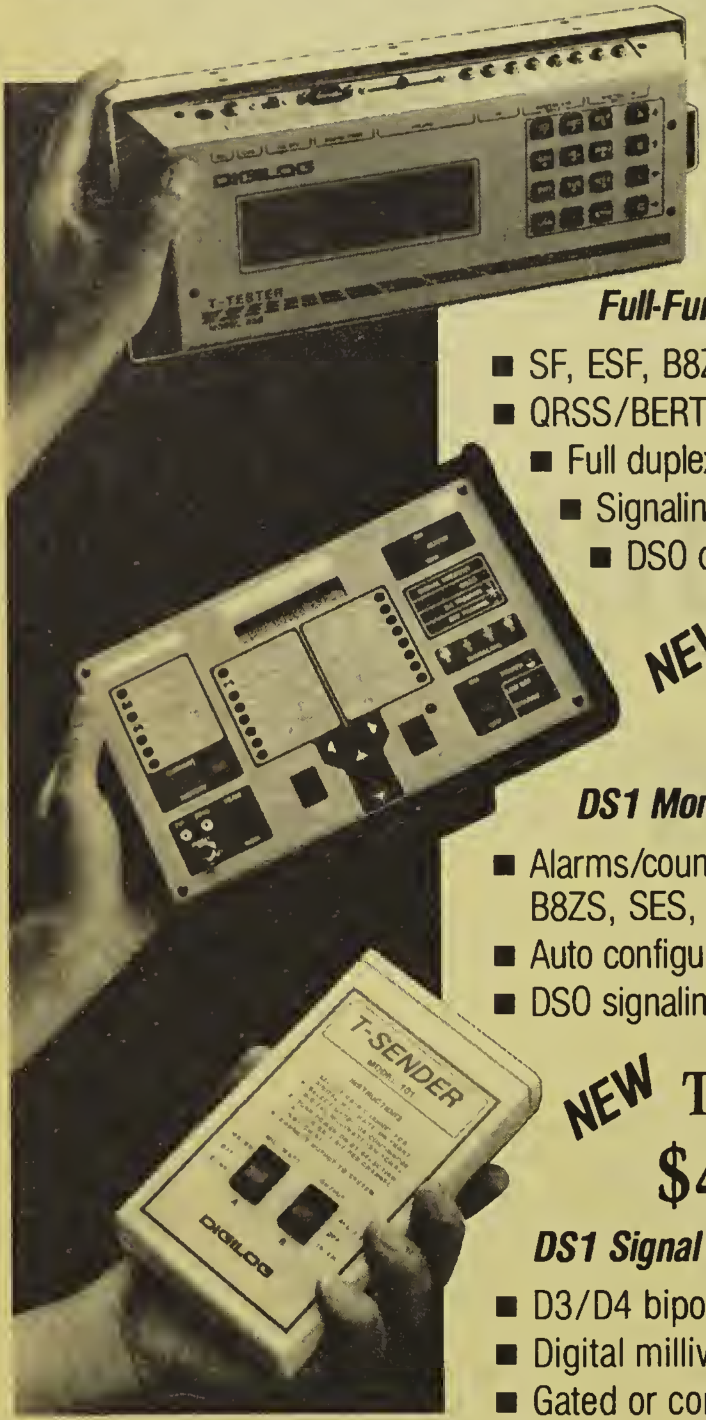

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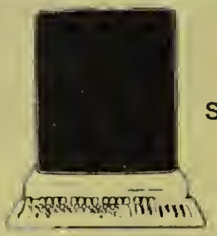

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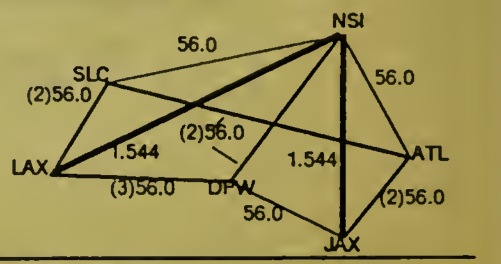

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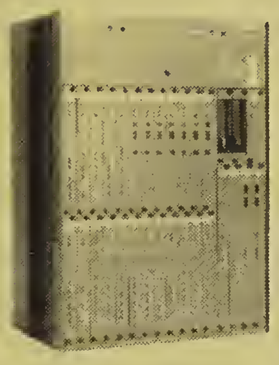

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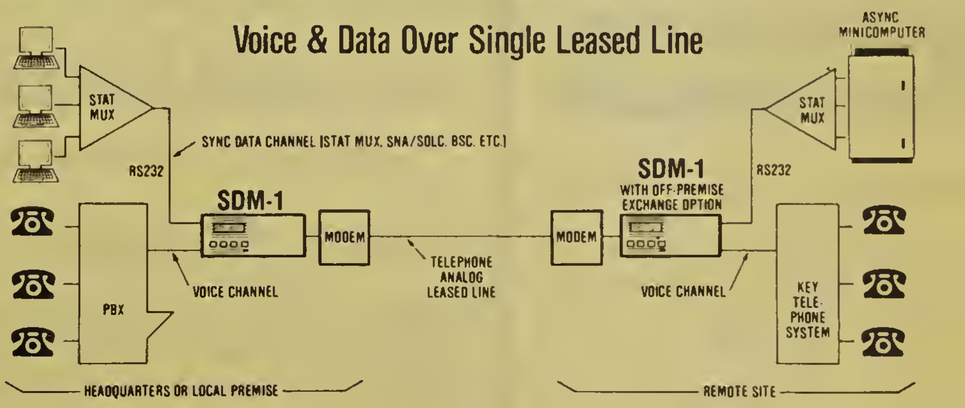
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NETWORK WORLD

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* November 7 - Purchasing Alternatives

* November 14 - Data Comm Management Update: Open Systems Networking

* November 21 - Telecom Management Update: Wiring and Cabling Alternatives

* December 12 - Telecom Management Update: Fiber Optic Systems (Early close due to Holiday)

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* December 5 - Electronic Mail Systems

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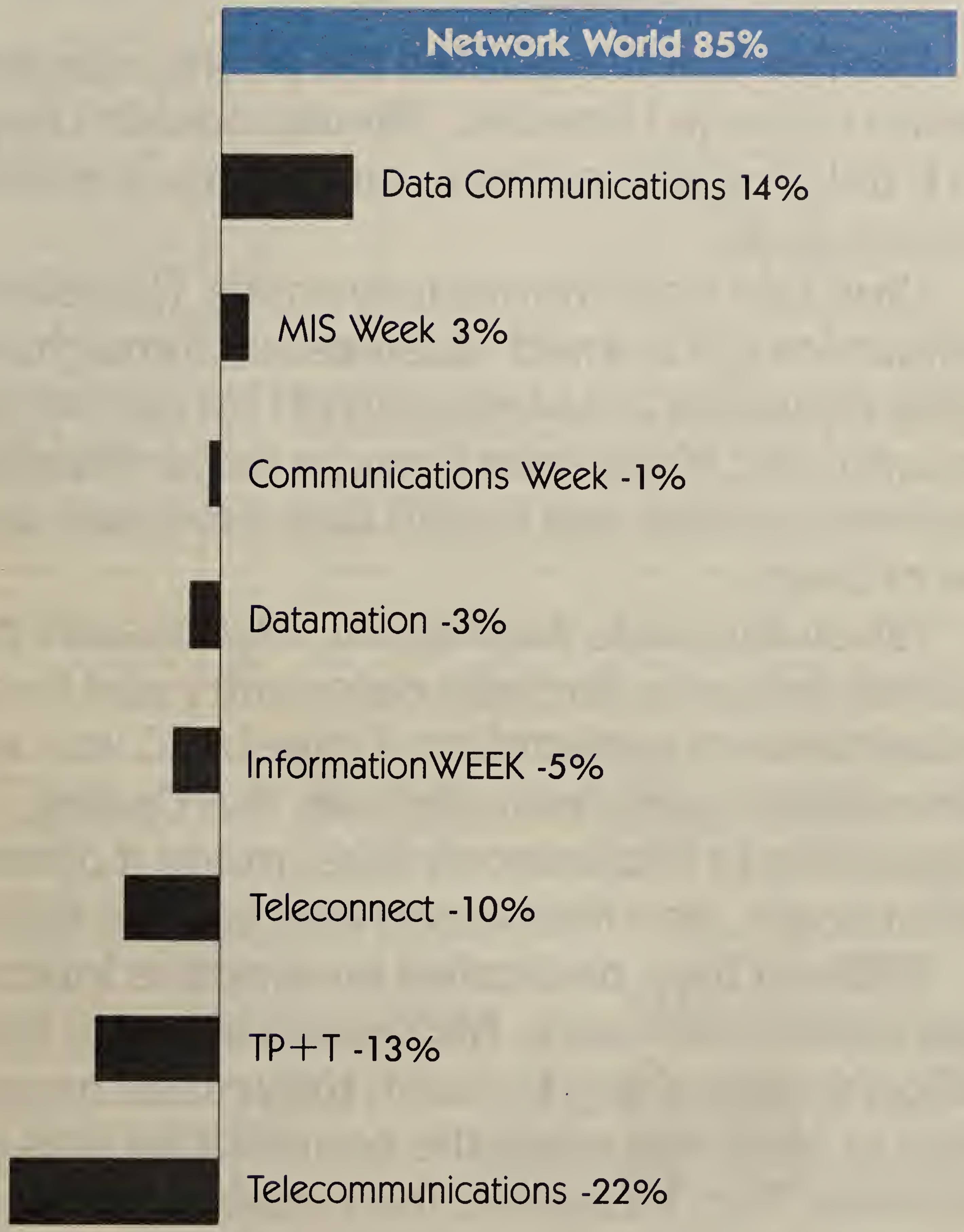

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Pont's largest bulk chemical motor carrier, agreed to conduct the first pilot test of the freight invoice. After considerable systems development effort and lengthy preliminary testing, the test was conducted in 1983. The system was successful and, in 1984, was implemented throughout the company. This application was an industry first.

Now Du Pont is receiving some 2,000 electronic freight invoices each business day from about 40 rail and motor carriers. This has reduced the front-end freight payment processing cost by 50% and enables Du Pont to comply with payment terms for all undisputed freight invoices.

Thus, the genesis of Du Pont's EDI activity was a staff effort — one that went unnoticed by the rest of the company.

However, while the TDCC was focusing on transportation-related standards, another group, which eventually became the ANSI Accredited Standards Committee X12, began developing standards for business transactions, such as purchase orders, acknowledgments and invoices. In 1983, this group published its first standards.

Also, American industries — especially automotive and textile — were being battered by foreign competitors with lower labor costs. Players in these industries realized that they needed to find ways to cut costs. EDI, they concluded, would help reduce transaction processing costs and enable fundamental purchasing changes, such as just-in-time inventory management, which can significantly reduce warehouse space and working capital tied up in product materials.

Those industries adopted aggressive programs to convince their suppliers to use EDI. Du Pont was among those first asked to participate.

Du Pont's EDI program

Responding to the needs of Du Pont's business organizations, the company's information systems department set up an EDI organization, headed by a manager with systems experience and a business background. This team spent their first few months determining an EDI goal and the strategies and tactics needed to achieve it.

The group's goal, in its own words, was that "eventually, virtually all forms of customer and supplier paper communications would be replaced by electronic means, and the ability to do so would be as mandatory as the telephone is today."

With that, the issue was not whether to have a comprehensive EDI program but what its scope and pace ought to be. The internal EDI organization recommended a broad-based EDI program. This was approved and launched in late 1984.

Vital to Du Pont's EDI strategy were the adoption and promotion of national and international EDI standards. As a first step, Du Pont joined the X12 committee and the Automotive Industry Action Group. It also helped form the Chemical Industry EDI Implementation Committee to foster EDI use in the industry.

Accordingly, representatives from 25 chemical companies were invited to spend a day at Du Pont's corporate headquarters in Wilmington, Del., to discuss EDI and to determine whether an industrywide standards effort would be worthwhile. The group concluded it would, and thus the Chemical Industry Data Exchange Committee was born.

Since late 1984, Du Pont has made considerable progress in EDI. A comprehensive IBM MVS-IMS mainframe system was installed to handle transmission and reception of EDI messages, validation of the messages against standards, interpretation and generation of standard messages, communications with applications systems, message logging, backup and recovery, and security.

Through EDI, Du Pont is now sending and receiving purchase orders, purchase order acknowledgments, material releases, advance ship notices, invoices, remittance and payment advice, bills of lading, freight invoices and quality-control data.

In addition, Du Pont offers customers a variety of specialized information services for which complete standards do not currently exist. These include electronic mail, quality data, computer-aided design and engineering, order status, materials specifications, expert systems and business management tools.

Thus Du Pont's vision of comprehensive electronic communications with its trading partners is becoming a reality, albeit at a pace which will always be slower than desired. This is due to two situations: Not many trading partners are EDI-capable (it is estimated that only 5,000 U.S. businesses have EDI capabilities — yet Du Pont has over 300,000 active trading partners), and standards do not exist for all the types of information Du Pont would like to exchange.

Standards: blessing or curse?

Everyone accepts the need for standards, but often with the proviso, "Standards are great; let's use mine." This is evidenced by the many standards groups in existence today — including ANSI X12 and the United Nations-sponsored Electronic Document Interchange for Administration, Commerce and Transport (EDIFACT) — of which some, such as ANSI X12 and EDIFACT, are intended to meet everyone's needs and others, such as TDCC, are intended to meet the needs of individual industries.

This is a problem for companies that deal with many industries because they find themselves in the position of having to support many incompatible standards, which increases systems and staff costs.

The various U.S. EDI standards organizations will continue as they are for some time but will eventually convert to ANSI X12 standards and change their focus to implementation issues (vs. standards development and maintenance) that will concentrate on usage conventions.

One issue being studied now by the X12 committee is how to migrate the X12 standards to those being promulgated by EDIFACT. Most ANSI X12 members do not need international standards and have no desire for them to be changed. Such a change would entail a large conversion effort for users of X12.

However, multinational companies do need international standards, and the eventual migration of X12 standards to full EDIFACT compatibility is inevitable. Most likely, the X12 standards will become a subset without the data segments and elements needed for international trade, such as currency and customs information.

Another major problem area has been the use of proprietary EDI standards, particularly by the major automotive and retail companies and their suppliers. These proprietary standards represent a significant investment. Companies just starting to implement EDI sometimes find, much to their dismay, that their EDI software cannot handle the proprietary formats of major customers. Developing special systems for each customer is expensive and imposes an ongoing maintenance burden.

The silver lining, though, is that the major companies that have developed proprietary EDI standards and imposed them on their trading partners (usually suppliers that must accommodate a major customer) have realized that it's in their best interest to convert to ANSI standards. In the long run, it will lower their system and staff costs and help keep their suppliers' costs down.

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Many, if not most, of these companies have begun efforts to convert to ANSI X12 standards while retaining their proprietary standards capability for an appropriate period to give their suppliers adequate time to convert to X12, too. Within just a few years, proprietary standards usage will generally have ceased.

Standards for identification of trading partners is a problem too. Some industries have adopted the Dun & Bradstreet Corp. corporate ID number as the sender and receiver identifier, often adding a suffix to identify the internal location involved. Others have gone with the Uniform Code Council's (UCC) company codes, while some use their internal vendor or customer codes. This forces many companies to develop systems to convert codes to and from those used by trading partners. This, too, is costly and difficult to maintain.

Gradually, companies will convert from using their internal codes to using the Dun & Bradstreet numbers, unless they are retail-oriented, in which case the UCC codes most likely will be chosen.

An even worse situation is the lack of standard industrial product codes — a situation that, unfortunately, will probably continue indefinitely.

Even when a company is fortunate enough to have all its EDI trading partners using X12 standards, certain standards issues must still be addressed. ANSI has published official EDI standards twice (in 1983 and 1986), and ANSI X12 has published (in 1987) one update of the 1986 official publication version. The X12 committee intends to publish updates, or releases, semiannually containing all new X12-approved standards and updates to existing standards.

For X12 users, this presents a dilemma. Should they adhere only to the official ANSI standards? If so, they risk not being able to perform transactions with companies, particularly customers, that implement the X12 committee's releases.

On the other hand, the X12 releases are not official ANSI standards because these have not been subjected yet to the full public review process required by ANSI, so some trading partners may choose not to implement them. These are particularly contentious issues when customers are involved because suppliers are essentially locked into using whatever version of the standards their customers use.

There is no easy solution to this problem. The ANSI standard review and publication process takes at least two years from start to finish, yet the need for prompt standards updates will continue until the standards have been used enough so that their theoretical designs reflect practical experience. This is very important because EDI is still young and the standards just now are starting to be used extensively. Some, even the officially published ones, have barely been tested.

Therefore, X12 must issue frequent releases that have gone through the full X12 review and approval process but not the official ANSI review and publication process. EDI users should support the most recent X12 releases and the most recent official ANSI publication.

While this process imposes some extra burden, it will help companies meet their own and their partners' data needs. This is the convention the chemical industry has adopted.

The extra burden involves having three sets of EDI tables to support and possibly three interfaces for each affected application system. Most EDI software providers are committed to being able to handle at least three sets of EDI tables.

A question now being considered is the role of the ANSI X.400 electronic-messaging standard relative to EDI. Although the X12 committee hasn't said yet whether X.400 will operate in the EDI arena, X.400 should be the communications standard for EDI because it will also handle internetwork exchanges and other forms of intercompany electronic communications. Farsighted companies will plan for its implementation as major computer vendors introduce their X.400 software.

Lastly, in the area of standards, there is the problem that not all needed standards exist or, if they do, they are not comprehensive enough to meet today's needs. Examples are standards for material safety data sheets, compound documents (voice, text and graphics) and CAD. The needed standards are being developed but, because they are more complex, will take much longer to complete than the routine business transactions that have already been standardized.

Summary

Standards are vital — especially to diversified companies. Most companies have come to this realization, and the resistance to national and international standards has weakened considerably. Companies will soon exchange business transactions worldwide on a standardized basis.

However, the standards are still evolving. Users are learning the standards' design flaws and correcting them. Rather than being frustrated by this, companies should view it positively and be flexible in these early EDI years. This is a situation that innovators typically must face, and it is a price one must pay to be a leader.

EDI is poised for rapid growth: The interest level is high, the basic standards work well, inexpensive and reliable software is available, and real productivity and cost savings are being achieved.

Companies not currently involved in EDI should start planning EDI implementation programs now. It won't be long before EDI capability will be a mandatory condition of doing business, as it virtually is now in the automotive industry. A word of assurance: There are no technical barriers to EDI — it is straightforward batch computer systems technology. With EDI, it is simply a matter of time.

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coordination of requirements across the entire range of information technologies by establishing and funding requirements groups, such as the North American MAP/TOP Users Group." This group is made up of the former U.S. MAP/TOP Users Group and the Canadian MAP Interest Group. Currently, the ITRC oversees no other groups.

One of the closest organizations to the MAP/TOP Users Group has been the Society of Manufacturing Engineers (SME), based in Dearborn, Mich. The SME has acted as the secretariat for the group, handling administrative and coordination functions almost since the group's inception.

Plans to separate the group from the SME have been under way for well over a year, according to SME MAP/TOP Manager Pat Van Doren. Van Doren says the separation and reorganization "goes along with the evolution of the group. It's becoming a self-supporting organization, and this [separation from the SME] will make it so; the group has been tied to the SME in almost a child-parent relationship."

As of the U.S. MAP/TOP Users Group Steering Committee meeting in August, 1,341 of the 1,712 current members were both SME and MAP/TOP Users Group members. Such dual memberships will not continue under the ITRC, according to Van Doren. In August, the SME sent letters to its members informing them of the impending separation.

Van Doren doesn't feel that such separation would harm the group. She says, "In [such an] association, having your own free-standing membership is critical."

At the top, the ITRC will have a president and chairman of its board of directors. The ITI's Falkenburg currently serves as both. The MAP/TOP Steering Committee, under the direction of the board, will oversee technical direction and management of MAP and TOP specifications and products that the ITRC may develop.

Membership in the ITRC will be available at four levels of responsibility and cost:

- **Corporate membership,** with a position on the board, will cost $100,000 per year;
- **Corporate Managing Affiliate membership,** with voting privileges for electing the MAP/TOP Steering Committee and eligibility for steering committee membership, will cost $20,000 per year;
- **Corporate Affiliate membership,** with voting privileges to elect the North American MAP/TOP Users Group chair, will cost $1,500 per year; and
- **Individual membership,** with the opportunity to participate in technical meetings and special interest groups, will cost $100 per year.

There are other responsibilities and privileges at each level; these are only general comparisons.

MAP today

What has changed in MAP and TOP, and what changes can be expected under the ITRC?

As mentioned earlier, MAP specifications were frozen by vote of the MAP/TOP Users Group in September 1987.

Ali Bahrololoomi, chairman of the MAP Task Force and of the MAP/TOP Media Committee, says, "We felt it was necessary. It was frozen to protect the investors in MAP. We have a lot of vendors out there putting time and money into the technology." Bahrololoomi is also manager of communications networks for the Buick, Oldsmobile and Cadillac division of GM in Warren, Mich.

The completed specifications for MAP Version 3.0 were sent to the SME on July 22. According to Bahrololoomi, the copyrights to MAP are owned by GM. The MAP/TOP Users Group wrote a letter to GM assigning the copyright to the automotive giant. "We didn't see any organization in place at that point to have it assigned to," Bahrololoomi states. "Now the ITRC can do whatever it wants to with the document, as long as they don't change it."

The MAP specification that the ITRC will oversee is not drastically different from the earlier MAP 2.1; it is more "fleshed out; it covers more details" as GM MAP Manager Mike Kaminsky stated in an interview last year. According to Bahrololoomi, the major differences are in the new messaging specification, the File Transfer, Access and Management (FTAM) specification, and a new network management specification.

The new messaging specification — Manufacturing Messaging Services (MMS) — is more complete than the old Manufacturing Message Formatting Standard (MMFS) protocol, Bahrololoomi says. Considered a working draft, MMFS was added as part of an appendix to MAP 2.1; "It was better than nothing," Bahrololoomi says. MMS is an integral part of the complete MAP 3.0, supporting such machine control services as initiation and conclusion of messages; the setting of domains and attributes; messaging for process control, cancel, resume and reset; and read/write capabilities. It allows better and faster communications among a greater variety of devices linked on a factory floor.

The new FTAM specification interfaces with Common Application Service Elements and the Open Systems Interconnection Presentation Layer; FTAM for MAP 2.1 did not. The new FTAM supports additional file types and has improved grouping, service negotiation and abstract syntax capabilities.

The network management specification addresses all seven layers of the OSI model. As it is based on the International Standards Organization's (ISO) current draft of a network management protocol, the MAP network manager is not yet complete. However, "This is the best we have now, until the standards are available," Bahrololoomi says.

In addition, other specifications appended to MAP 2.1 have been officially integrated into 3.0. Most notable is the directory service specification for electronic messaging, which was appended to 2.1 but is now part of 3.0.

TOP

Perhaps the biggest changes have been in TOP. As an office-area network architecture, TOP has not received the attention paid to the more visible MAP. Some attendees at ENE joked that TOP had not been seen for years and should have its picture placed on milk cartons. Version 3.0, introduced for ENE and officially released in September, has laid most skepticism to rest.

Unlike with MAP, there was no TOP Version 2.X; the specifications went directly from 1.0 to 3.0. James Converse, coordinator of TOP activities for Kodak's Systems Architecture Center in Rochester, N.Y., says the new numbering was adopted to have the same nomenclature as MAP, thereby avoiding any confusion among users and vendors.

According to Converse, the earlier version of TOP did not have enough functionality for any real products to be developed. "It was called a specification, but it was really more of a statement of direction," he says. "It got people thinking about what ought to be in the next version and what their planning activities should be for the implementation of TOP products."

Charles Parisot, senior network architect for Boeing Computer Services in Seattle, is also chairman of the MAP/TOP Users Group's TOP Architecture Committee. As such, he has overseen

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much of TOP's growth from Version 1.0 to 3.0.

Parisot says that TOP 3.0 is different in four major areas: Subnetwork Access, Data Transfer Services, Interchange Formats and Application Interfaces.

■ **Subnetwork Access.** TOP 1.0 supported one basic subnetwork architecture: 802.3 carrier-sense multiple access with collision detection Ethernet at 10M bit/sec. Version 3.0 still supports CSMA/CD but also supports 802.4 token ring, 802.5 token bus and ISO X.25. According to Parisot, 802.3 remains the primary choice for implementing TOP on local-area networks, while X.25 is the preferred architecture for wide-area nets. Token ring and token bus are seen as necessary to interface with MAP and other subnetwork architectures and to give TOP the flexibility needed to establish itself.

Along with additional subnetwork support, TOP 3.0 includes a dynamic routing protocol. This allows network traffic to be routed as needed, while the network is in operation, without the need for manual routing and configuration. Based on ISO routing protocols, the dynamic routing is applicable to all three 802.X networks included in TOP.

Version 3.0 provides remote-site access with a "full upper layer stack."

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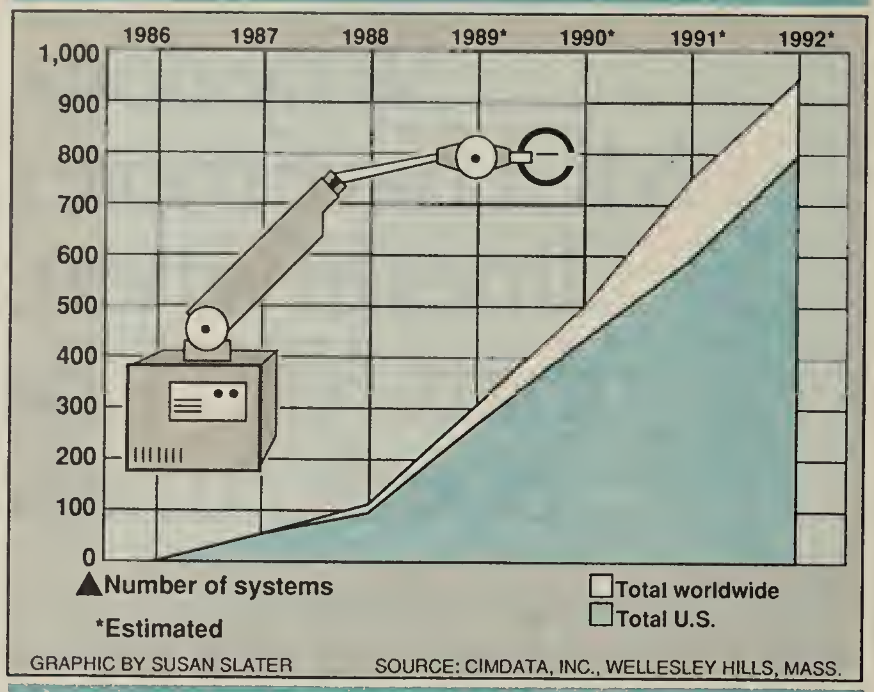
Annual MAP installations



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■ **Data Transfer Services.** TOP 1.0 supported remote-site access FTAM but "only in a very basic way," Parisot says; the OSI Presentation Layer was not included. Version 3.0 provides remote-site access with a "full upper layer stack," Parisot explains, including the OSI Presentation protocol and the final ISO-standard version of FTAM.

In addition, Data Transfer Services has additional functions not found in 1.0, including electronic mail support, based on ISO X.400; remote terminal access support, based on the OSI Virtual Terminal protocol; X.500-based remote directory services; and support for the ISO Network Management draft protocol, as in MAP.

■ **Interchange Formats.** TOP 1.0 supported no data interchange format. TOP 3.0 includes support for three major formats: graphics, based on the ISO Computer Graphics Metafile standard; office document interchange, based on the ISO Office Document Architecture/Office Document Interchange Format protocols; and Product Definition Interchange, based on ANSI specifications. No international product definition standard exists at this time, Parisot says.

All three of these formats can be used with FTAM, allowing users to define the contents of any file they are remotely accessing. They can also be used with X.400 so that users can actually define the contents of messages being exchanged.

In short, these three new formats will allow users greater flexibility and power in electronic messaging than standard ASCII-based messaging does.

"We feel that, in TOP, exchanging ASCII-based memos is really yesterday's technology," Parisot says.

■ **Application Interfaces.** Two application interfaces have been defined for TOP 3.0. More are needed, according to Parisot, and this issue will be addressed in a future version of TOP. There were no application interfaces in TOP 1.0.

The interfaces in TOP 3.0 comprise an FTAM interface, which allows users to program and use services such as remote file access, and a graphics interface, which allows users to create and manipulate graphics information and generate graphic interchange files.

Overlap and stability

According to Parisot, TOP 3.0 has not been frozen as MAP 3.0 was. No formal stability statement has been issued, as there was with MAP.

"There is an implicit stability built into TOP," Parisot explains, "which may not be obvious to the public." He cites three areas of stability. The first is the overlapping of MAP and TOP, which gives TOP the stability of the frozen MAP standard. The second is the fact that TOP is based on National Institute of Standards and Technology (NIST) agreements to support international standards. Because these agreements are internationally stable, he says, that stability is carried into TOP.

The third element is the interweaving of TOP, MAP and the federal government's Government Open Systems Interconnection Profile (GOSIP). The approval of GOSIP as a federal information processing standard has given both MAP and TOP strong "implicit stability," Parisot says, adding that TOP vendors have accepted these elements as a guarantee of stability.

TOP, MAP and GOSIP overlap in many areas, which may be described using the four "building blocks" of TOP as a reference:

■ **Subnetwork Access.** GOSIP and TOP both support 802.3, 802.4, 802.5 and X.25 networks; MAP supports 802.4.

■ **Data Transfer Services.** FTAM remote-file access is common to GOSIP, MAP and TOP; OSI directory service and network management support is common to MAP and TOP. X.400 E-mail support is common to GOSIP and TOP. While remote terminal access is found only in TOP at this point, support for it has been announced in the next version of GOSIP.

■ **Interchange Formats.** GOSIP does not support this area or Applications Interfaces at this time, but the Department of Defense's Computer and Logistic System and TOP currently support both product definition interchange and graphic information interchange in compatible, but not identical, methods. The Interchange Formats specification is not applicable to MAP.

In addition, the NIST is working on a profile for office document interchange that should be similar to that used in TOP.

■ **Application Interfaces.** FTAM is found in both MAP and TOP but not the current GOSIP. Parisot says there is "strong intent" in the MAP/TOP community to promote FTAM for use in the federal Portable Operating System Interface standard.

Ethernet

Controversy has surrounded the inclusion of 802.3 Ethernet use in MAP since MAP was first designed. Digital Equipment Corp. has consistently promoted the use of Ethernet in manufacturing, asserting that the technology is viable and effective in the manufacturing environment. DEC has conducted tests in several different manufacturing applications. Each test, the company said, proved that Ethernet will support the communications traffic of a factory floor.

The designers of MAP have consistently disagreed with DEC's findings and have chosen the 802.4 token-bus architecture as the medium of choice for the factory floor. Subsequent efforts by DEC and others to get 802.3 included in MAP have been rebuffed. In a letter to DEC Vice-President William Johnson, Gardner from MAP/TOP wrote, "In order to achieve the highest degree of integration at the factory-floor device level, it is critical to maintain a single choice — the 802.4 token-bus protocol." GM's Kaminsky has repeatedly said Ethernet does not belong in MAP but can effectively be used in TOP. GM's Bahrololoomi agrees. "We are not denying 802.3. We are not in any way rejecting it," he says. "It is part of TOP; we accept it as part of TOP."

John Bernard is director of the MAP/TOP Information Program for CIMdata, Inc., a manufacturing automation research firm in Wellesley, Mass. His feeling, based on research and interviews with MAP/TOP users, is that Ethernet could easily be a part of MAP. "They just need to change the specs to do it," he says.

"It's not really a bandwidth issue," he adds. "If you overload Ethernet, sure, you've got problems, but if you design it properly, you shouldn't have any problems. Token bus can be overloaded as well, and you can have a problem with losing the token, which few people talk about. Nothing's perfect — they're both viable.

Plans call for the ITRC to assume MAP/TOP administrative duties as of Jan. 1.

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"The big argument is that you can't address things at specific, determinate times with Ethernet — and you can make that argument in some cases, but I think it's very rare," he continues. "I think it's a political issue and not technical."

Testing and evaluation

As the umbrella organization overseeing the North American MAP/TOP Users Group, the ITRC will also have responsibility for testing MAP and TOP products for conformance to the standard specifications. According to Bahrololoomi, the European MAP Users Group, the Corporation for Open Systems and the ITI are working to establish a test facility and procedures. He expects the first procedures to be available early in 1989, perhaps in the second calendar quarter. Full testing facilities and procedures should be in place by the end of 1989.

The ITRC currently has no solid plans to collect worldwide MAP and TOP testing activity under its umbrella. Bahrololoomi and others feel that this is something the ITRC should handle. "There's no question that it has to be [the ITRC's responsibility]," Bahrololoomi says.

The foreseeable future

Current plans call for the ITRC to assume full MAP/TOP administrative duties as of Jan. 1, 1989. Transition committees are hard at work within the North American MAP/TOP Users Group to assure that the transfer of power is as orderly and smooth as possible. While Falkenburg and other ITRC and North American MAP/TOP Users Group officials were unavailable for comment on the transition progress, most members of the users group are cautiously pleased.

Bahrololoomi says he is looking forward to working with the ITRC but isn't sure everything will be ready in January. "Hopefully within a year or two, the new organization will be able to take it all over," he says, adding that GM and other major sponsors aren't planning to dump MAP/TOP in the ITRC's lap as of Jan. 1. "We're not going to just drop the ball and say, 'Hey, guys, take it.' A lot of questions remain. We have to make sure that we bring people up to speed with the new technology until everybody feels comfortable with it." He says he plans to be part of the new organization and will be highly involved on the subcommittees.

The establishment of the ITRC was necessary, he adds. "It will absolutely make a difference in spreading MAP/TOP further. The time is right for others to get involved and keep the ball rolling."

The SME's Van Doren agrees that the new organization will succeed.

"We feel that it is the right time for it to stand on its own," she emphasizes. "We certainly wouldn't be willing to let it become independent if it wasn't ready to."

Bernard of CIMdata thinks the ITRC has a big job ahead. "I think the new organization's got to build on what's there now and be concerned about tying things together," he says. "Don't let some of these fairly minor technical problems tear apart the organization."

Ashton-Tate to develop DEC VAX version of dBase

Also plans software to link dBase users with DEC relational data base management system.

By Jim Brown
New Products Editor

BOSTON — Digital Equipment Corp. and Ashton-Tate Corp. last week announced that Ashton-Tate will develop a version of its dBase for DEC VAXes and software that allows users of its personal computer-based dBase to access DEC's Rdb/VMS relational data base management system.

At a joint press conference here, DEC also unveiled PCLAN/Server 2000, a specially equipped MicroVAX 2000 that can act as a file and application server for personal computers attached to an Ethernet-based DECnet.

Although no specific products or development timetables were announced, Ashton-Tate said it intends to develop VMS- and Ultrix-based versions of dBase that will allow a VAX to act as a data base server for a network of personal computers running dBase applications.

Ashton-Tate will also develop software that will enable programmers to write dBase applications for VAXes that can be accessed by users of DEC VT-100 terminals.

The products will support industry-standard SQL commands. Pesonal computer and workstation dBase users will generate dBase SQL requests for data on their systems. DEC will modify existing VAX-resident SQL software to convert Ashton-Tate's SQL requests to VAX SQL.

Once converted to DEC SQL-compatible format, dBase data requests can be routed to either VAX Rdb/VMS data bases or to DEC's VAX-resident Vida software, which provides read-only access to IBM mainframe-resident IBM DB2 or Cullinet Software, Inc. IDMS/R data bases.

"Ashton-Tate is the big winner of the two," said Robert Cameron, senior industry analyst for Dataquest, Inc.'s Boxborough, Mass.-based Information Systems Division. With the personal computer DBMS market pretty well saturated, Ashton-Tate is looking to develop minicomputer-based versions of dBase capable of working with its existing microcomputer-based products, Cameron said.

DEC's PCLAN/Server 2000 is a specially outfitted MicroVAX 2000 microcomputer running an enhanced version of DEC's VAX/VMS Service for MS-DOS software. Up to 30 MS-DOS-based personal computers running DEC's DECnet/Personal Computing System Architecture (DECnet/PCSA) software can be linked to a PCLAN/Server 2000 via DECnet.

Users can create a dedicated PCLAN/Server 2000 local-area network using thin coaxial cable, or they can link a PCLAN/Server 2000 and personal computers to a corporate backbone DECnet Ethernet supporting other DEC devices, such as VAX minicomputers and terminal servers. Up to 64 PCLAN/Server 2000s can be linked to a single DECnet.

The DECnet/PCSA software enables personal computers to transparently link to VAX VMS Services for MS-DOS.

The latter software converts DOS commands to VAX commands, enabling personal computers to access VMS files, MicroVAX 2000-attached peripherals and DOS applications stored as VMS files on the MicroVAX 2000. DECnet/PCSA software also supports terminal emulation, which allows personal computers to appear to VAXes as VT-100 terminals.

The VAX VMS Services for MS-DOS software supplied with PCLAN/Server 2000 includes new features such as PCMail, which enables PCLAN/Server 2000-supported personal computers to exchange electronic mail.

Analysts said PCLAN/Server 2000 reflects DEC's strategy of linking a mix of devices, including personal computers, to its VAX. "DEC doesn't care whose box is on the desktop. It just wants to make sure those customers have a VAX in the back room," Cameron said.

A PCLAN/Server 2000 supporting 16 users is priced at $18,800.

UB unveils LAN Mgr. OS

continued from page 3

stations now.

"As our users start to install LAN Manager, they'll begin to install it on OS/2-based servers, and the primary workstations for these servers are DOS workstations," Benesch stated.

The Ungermann-Bass Net/One LAN Manager also supports Xerox Corp.'s Xerox Network Systems and the Transmission Control Protocol/Internet Protocol.

"This support gives additional connectivity to those users that have already standardized on TCP/IP," Benesch said.

Net/One MS OS/2 LAN Manager will begin shipping to select customers next month, with general availability slated for December. It costs $2,995 per server for an unlimited number of users. The firm is also marketing an Entry Level System version capable of supporting up to five users on a net. That version costs $995 per server.

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Retix, Telenet support interface

continued from page 2

hear the proposal, Kozak said.

He declined, however, to reveal how many vendors were represented at the dinner.

Any specific vendor's presence at or absence from the meeting should not be construed as an endorsement or rejection of the proposal, Kozak said.

If the standards group is formed, it will act quickly, Kozak said. A baseline specification for the interface has already been offered by Retix, and an independent third-party consulting group has tentatively been chosen to handle the development of the specification, he said.

The group would also solicit input from committee members on changes that they would like to see. The group's goal will be to come up with a standard within 60 to 90 days.

"If this is going to be a long, drawn-out process, then we're not really benefiting anyone," Kozak said.

Small vendors especially would benefit from such a committee because they would have "a chance to contribute to something that could be an industry standard," Kozak said.

Both Banyan and Retix confirmed that a new standards committee is being studied, but they refused to comment on an individual basis. "We'd prefer to wait for a group statement on the group's direction," said Retix President Stephen Frankel.

Darrell Miller, vice-president and general manager of the Novell Communications Division, added that his company is currently studying the standards committee proposal with interest.

"The more interconnectivity that's out there, the more valuable LAN technology is and therefore, the faster it will grow," Miller said. "Our fastest growth happens when the market grows."

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See us on page 55.

Datakit II due out by year end

continued from page 1

range of connection options:

- **Synchronous/Asynchronous Time Division Multiplexers (SAM).** The SAM/504 can support from 32 to 504 synchronous or asychronous ports in increments of 32, and it can be linked to a central Datakit II via 48K, 56K or 64K bit/sec facilities as well as T-1 metallic circuits or 8M bit/sec fiber trunks.

The SAM/64 supports 32 or 64 synchronous or asynchronous ports and can be tied to a Datakit II via trunks ranging in speed from 9.6K bit/sec to T-1 rates, or by an 8M bit/sec fiber trunk.

The SAM/8, which will not be available until mid-1989, will support eight user ports and trunks at speeds up to 56K bit/sec.

All three SAMs support synchronous data transmission at 9.6K bit/sec and asynchronous line speeds ranging from 110 bit/sec to 19.2K bit/sec. The largest concentrator available with the current Datakit VCS is a 64-port unit.

- **Local net bridging concentrators.** These devices provide permanent virtual circuits among multiple Ethernet, Starlan or other IEEE 802.3 networks. "Up to nine independently bridged arrangements can be combined to provide the appearance of one large network," the literature stated.

The bridge is certified for use with Transmission Control Protocol/Internet Protocol, Xerox Corp.'s Xerox Network Systems, AT&T's 3Bnet and Digital Equipment Corp.'s DECnet.

- **Multipurpose remote shelves (full and reduced).** Datakit II remote shelves support multiple types of workstation and host interface modules, including TSM-8, an eight-port synchronous/asynchronous interface; TY-12, a 12-port asynchronous interface; an X.25 interface for hosts and access to packet networks; and multiplexed host interfaces called CPM Modules.

The full shelf supports up to 12 interface modules, and the reduced shelf has four slots.

With the addition of switching modules, the full shelf can be upgraded to become a switching node. The shelves can be linked to a central Datakit II using 56K bit/sec, T-1 or 8M bit/sec fiber trunks.

- **Channelkit.** AT&T is also developing a Datakit II channel-attachment option to IBM System 370-type mainframes. The VME-based Channelkit will enable IBM 3X74 terminal control units to access IBM hosts at channel speeds.

"Multiple SDLC point-to-point lines or multidrop lines are multiplexed onto one fiber-optic cable to Channelkit," according to product documents.

In addition to expanded data-handling capabilities, AT&T will announce a new security feature for the Datakit II that will run on a dedicated adjunct processor.

According to a source within AT&T who is familiar with the Datakit II, the system will require end users to carry credit card-sized devices to access Datakit II services. "The network manager can use one or many security servers in the Datakit II [VCS] network," said the source, who requested anonymity.

Other Datakit II enhancements will include a call-queuing server that queues data calls when all ports are occupied and interfaces for Integrated Services Digital Networks.

Private users and BOCs with the current Datakit will be able to upgrade to the Datakit II by upgrading switch software, adding memory and installing whatever interface options are desired, the source said.

Several large corporations use the current Datakit in private networks. "Datakit [VCS] users are typically large, geographically distributed corporations that use computers made by several different vendors," the source said.

The Superstar

AT&T will introduce a third version of the Datakit to a handful of large corporations next year. That version, called Superstar, will have a 200M bit/sec backplane bus that can switch one million packets per second, according to an analyst briefed on the product.

The Superstar is a production prototype, according to the source. It will not be generally available until late next year. ◻

IBM, UCLA work to wed

continued from page 1

oped with Carnegie-Mellon University. AFS enables Unix-based processors to share files over TCP/IP-based local networks.

Elie Harel, UCLA's assistant director of administrative information services, said the school has three major IBM SNA networks as well as numerous TCP/IP-based Ethernet and token-ring local nets. In all, more than 100 individual networks are spread throughout various academic and administrative departments.

Today, only a few of the networks are linked. But UCLA is installing a fiber-optic backbone to link all major campus buildings and networks, Harel said. The backbone will be a token ring that supports both TCP/IP and SNA data at 4M bit/sec.

Eventually, Harel hopes to upgrade the fiber to the emerging Fiber Distributed Data Interface standard, which provides for transmission at 100M bit/sec.

One goal of the project will be to develop software for an IBM 9370 minicomputer that will sit on the backbone and function as a gateway, conducting protocol conversion between every level of the multilayered SNA and TCP/IP architectures. Individual campus nets will access the gateway via the backbone.

Initially, five academic and two administrative department networks will be linked by the fi-

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Calendar

Nov. 10-11, Boston — Unix: Mainstream or Myth? Contact: The Yankee Group, 200 Portland St., Boston, Mass. 02114.

Nov. 14, Atlanta — SNA Concepts and Products. Contact: American Data Group, Inc., P.O. Box 920697, Norcross, Ga. 30092.

Nov. 14-16, Dallas — Data Communications Network Design and Optimization. Contact: Institute for Advanced Technology, 1450 Energy Park Drive, St. Paul, Minn. 55108.

Nov. 14-16, San Jose, Calif. — Universal Wiring Systems and Advanced LAN Networking. Contact: Zatyko Associates, P.O. Box 1800, Tustin, Calif. 92680.

Nov. 14-18, Las Vegas — COMDEX/Fall '88. Contact: The Interface Group, Inc., 300 First Ave., Needham, Mass. 02194.

Nov. 15-17, Princeton, N.J. — Talking Yellow Pages and Advertiser-Supported Voice Services. Contact: Talking Yellow Pages Conference, P.O. Box 145, Point Pleasant, Pa. 18950.

Nov. 16, New York — Network Management for the Banking/Financial Industry. Contact: Timeplex, Inc., 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

Nov. 16-17, Washington, D.C. — Telecom Management Software: How to Plan & Select Telemanagement Systems. Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Nov. 17-18, Washington, D.C. — Coping with the Fast-Moving PS/2 Technology and Products. Contact: Data-Tech Institute, Lakeview Plaza, P.O. Box 2429, Clifton, N.J. 07015.

Nov. 28-Dec. 1, Hollywood, Fla. — GLOBECOM '88. Contact: IEEE Globecom '88, c/o Southern Bell, 6451 N. Federal Highway, P.O. Box 5567, Fort Lauderdale, Fla. 33310.

Nov. 29-Dec. 2, McLean, Va. — OSI Product Integration Conference. Contact: Corporation for Open Systems, 1750 Old Meadow Road, McLean, Va. 22102.

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E-mail users urge support of X.400

continued from page 2

said that many vendors have begun pilot-testing X.400 applications this year.

"X.400 has arrived. It will have a slow start, but its pace of growth will accelerate as results of the pilot tests are made known," Cinecoe said.

"Today, people primarily use [E-mail to] send short messages. The new justification for electronic mail will be sending binary documents, like spreadsheets and graphics displays, to users outside of the company network," Cinecoe said.

Other applications discussed at the conference included the use of E-mail to originate messages that are delivered in hard copy as a facsimile, mailgram or regular postal letter. Applications merging electronic messaging with voice mail and electronic data interchange were also aired.

Despite a wide range of promising applications, many speakers cautioned that the success of E-mail depends primarily on whether people find it easy to use.

Lee Camp, vice-president and general manager for information services at Pacific Bell, said that "electronic mail must be user-charming. It can't be as difficult to use as it is now. It must be as easy to use as turning on a television set."

Most speakers agreed that the challenge facing electronic messaging is not in developing the technology but in making it accessible to users.

Speakers also noted that users are sensitive to changes in the way messaging systems are operated. A major difficulty is making the transition from an old to a new system, said Gerald Brown, senior systems analyst at Eastman Kodak Co.

"You can't change the company's messaging system without causing havoc for the user who has grown accustomed to using E-mail in a certain way. The training problems are enormous," Brown said.

In fact, changing a system could alienate users and result in an underused resource, said Peter Donaghy, manager of user services and support at Hughes Aircraft Co. in Long Beach, Calif.

"The most important part of building a system is reliability. We can't let people down once we've convinced them to use the system. It doesn't take too many times before people stop using the system entirely," said Donaghy.

Other speakers cautioned against trying to regulate ways of using E-mail. "We decided to place no restrictions on the ways they could use the system. We let them decide what was the best and easiest way instead of trying to tell them," said Kenneth Gottry, director of office technologies for MONY Financial Services in Syracuse, N.Y.

Gottry criticized vendors that push products on users without taking the time to learn their specific needs and requirements. He said that vendors have to understand the diversity of the marketplace and that one product does not serve all.

Bell Atlantic server links E-nets, CO LAN

continued from page 3

livery in the first quarter of 1989.

LANserver is the first in a family of networking products, dubbed LANscape, that will be built around Bell Atlantic's central office local network. Future products to be added will provide access to IBM Token-Ring Networks, Systems Network Architecture networks and Integrated Services Digital Network environments, said Bruce Gordon, vice-president of marketing for Bell Atlantic.

Bell Atlantic believes Centrex, which grew 7% in usage last year, will be an increasingly important part of its overall networking offerings, Douglas said.

Currently, Bell Atlantic has 25,000 Centrex ports in place, representing approximately 80 customers, he said.

Douglas said he thinks the majority of these users have on-site local networks to which they need access.

According to company officials, the new product offering should also be attractive to universities and federal users with campus environments.

IBM, UCLA work to wed SNA, TCP/IP

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ber backbone. The ultimate goal is to link some 10,000 end users throughout the campus with the net.

Part of the study will focus on using IBM Personal System/2s as bridges to interface SNA networks to the backbone, Harel said. Similarly, UCLA will use IBM RT Personal Computers acting as TCP/IP routers to link TCP/IP networks to the backbone.

Initially, the 9370 will do little more than pass packets among users on similar networks. As the project progresses, the ability to convert protocols will be developed, enabling the 9370 to convert SNA packets to TCP/IP and vice versa. By the end of the study, Harel hopes to be able to support all the local networks on campus, including networks from Novell, Inc. and Apollo Computer, Inc.

Although Harel acknowledged that communications between SNA and TCP/IP networks is already possible, he said it is a cumbersome, time-consuming process.

Users have to identify the remote network they wish to access and conduct a number of mechanical steps. Remote logon to a disparate network is impossible, he said.

If the study is successful, UCLA users will be able to use a single workstation in one network to access files stored on another network without even knowing where that file is stored.

IBM will be monitoring the progress of the project to determine when it may be able to market a new product resulting from the study, said Robert Mazza, IBM's director of product development for university and college systems. He would not say when that might be.

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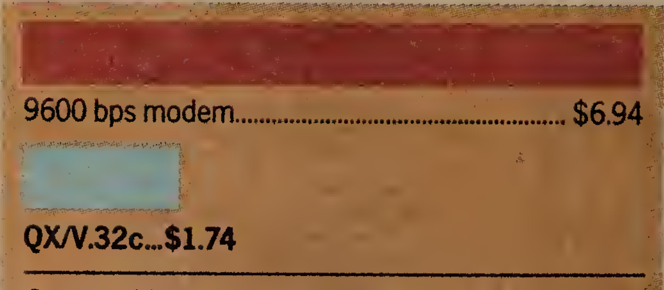

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